

JOURNAL

of the

AMERICAN

VETERINARY MEDICAL

ASSOCIATION

UNIVERSITY OF CALIFORNIA

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PAGES 280 - 300

VOLUME 37, NUMBER 780

MARCH 1942

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"CORN STATES"

WARTIME PRAGMATISM

In the task of stepping up the production of essential material "for the duration" there is pragmatism in being prepared to provide a means to that end.

Likewise, there is pride in having chosen competent college-trained men to use the specialized material needed to step up food production at the source of supply.

With quotas of trained veterinary personnel going to the armed forces in different parts of the world charged with supervising the procurement of wholesome rations, the means of providing, in ample quantity, products of merit to those left behind to serve the civilian population can also be pointed out as a wartime necessity.

Among the all-out American industries voluntarily commissioned to defend the country are the countless food-producing farms faithfully serviced by the college-trained patrons of

**The
CORN STATES SERUM COMPANY
Omaha**

Journal of the American Veterinary Medical Association

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600 S. Michigan Ave., Chicago, Ill.

VOL. C

MARCH 1942

NO. 780

The Poultry Industry Needs the Veterinary Practitioner^{*}

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COORDINATION, integration and coöperation are words that are being heard a great deal during these times of national defense. However, the words apply no less aptly to the poultry industry and certain situations that exist therein. We are all aware that for the past ten years poultry diseases have taken an undue toll from the poultry industry. During this time the expenditures for medicines, drugs and remedies have mounted along with the mortality. It would be unfair to say that the two were necessarily related, although they have been concurrent. Little good has been done by the various crusades that have been launched against remedies and medicines. Perhaps these crusaders have been expecting too much from the poultrymen. All they should do is to look elsewhere in our human population. They will see that the medical profession's crusades against patent medicines and the so-called healing arts still have much territory to cover, for we have many unscientific approaches in our social order, even to the human disease problem. It is only natural that the poultryman turns to the one who leads him to believe that a solution is at hand. The practitioner's ethics do not permit him to inform the

poultrymen through any advertising medium of the good the veterinarian could do the poultry flock. The approach of the practitioner is through example. I regret to say that too frequently we have situations where the practitioner has indulged in ineffective medication. In some cases he has been known to consummate his call with the sale of some drug or remedy for administration to the flock. Perhaps in no class of livestock has medication proved to be of as little value as with poultry.

LAGS

We are hearing about certain lags in production, in industry and in the training of men for tasks connected with defense. At the moment I am particularly concerned with the three-fold lag in the poultry industry as it is related to the veterinary profession. First, I wish to refer to the lag of you practitioners in learning about the accurate diagnosis and control of poultry diseases, especially the differential diagnosis of certain diseases of virus and nutritional nature. All too frequently in certain cases the local hatcheryman, the county agent or the poultry breeder is better informed in certain fine points of differentiation than the local veterinarian. This is in spite of their lack of fundamental knowledge in pathology and is frequently associated with the lack of interest,

^{*}Presented at A.V.M.A., Meeting, Indianapolis, Indiana, August 12, 1941.

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thought and study on the part of the practitioner. On the surface, this appears to be a sharp criticism, but we must face the facts if we are to solve the problem at hand. Since we are primarily concerned with the good that can be done by the entire profession for the poultry industry, we had just as well "call a spade a spade."

A second lag that I wish to mention is that of the poultry industry in learning that the veterinary profession has a real service to render the poultryman. He must think of the practitioner not as someone who might cure his sick chickens, but as one who can advise him on problems of disease control, hygiene and animal health. I am coming to believe that the Chinese philosophy of the practice of medicine might well be applied to our poultry pathology problem, namely; that the poultryman should pay the practitioner for keeping disease out of his flocks rather than for attempting to cure diseased birds.

All diseases run their natural course, and the practitioner can give the poultryman a much better understanding of the course of the disease in his flock. The industry is gaining confidence in the practitioner as he takes more interest in poultry diseases, becomes more capable of meeting the poultryman's needs and is expressing this confidence by employing the practitioner at a fair fee when results are forthcoming.

The third lag I wish to mention is that of delayed diagnosis. At present, the poultryman does little about the problem of disease in his flock until several weeks have elapsed and a number of birds have died. He does not get excited when the first one becomes sick, nor when he loses the third or fourth hen. But finally, when ten or twelve have died, he becomes quite concerned. What does he then do? Here is a situation where an immediate diagnosis would be of untold value in controlling the spread of the infection. In case the poultryman is unaware of the help the local veterinarian could give him (all too many fall in this group) he consults his local hatcheryman, feed dealer, or perhaps the

county agricultural agent. In some cases he sends a few sick birds to a laboratory for diagnosis. The shipment of these diseased birds not only may serve to spread the infection to healthy breeding stock in the same express car, but also serves to further delay the answer. When the diseased specimens arrive at the laboratory, the diagnostician may need several days to diagnose the case differentially. By the time the diagnosis has been completed and the information is available for the poultryman much of the trouble of consequence has already occurred. In many cases the resistant birds have recuperated and the more susceptible ones have died. Pardon my editorial insertion that it is my viewpoint that this is frequently what happens when a remedy, drug or medicine is thought to be effective with chickens. The remedy gets the credit for having cured the resistant birds, which probably would have survived had no medication been practiced.

DIAGNOSTIC LABORATORIES

If poultry diseases are to be adequately controlled, these three lags must be avoided in the future, or at least the resulting damage to the poultry industry and particularly the flocks must be greatly lessened. The state diagnostic laboratories are designed to serve in controlling the last lag which I mentioned, namely; that of diagnosis at a central point by a veterinarian who has specialized in poultry pathology. However, most of these laboratories much prefer to have the diagnosis made in the field by the local veterinarian, who is familiar with poultry diseases and sees the entire flock and the environmental conditions. In such a case, the veterinarian then consults the specialist at the state laboratory only when doubtful or obscure cases occur. One big advantage of a field autopsy and diagnosis under the eye of a skilled local veterinarian is that the poultryman gets his answer immediately. Also the diseases are not tracked over the state, and the lapse of time to get the diseased birds to the central laboratory is avoided.

For diagnostic service and consultation the poultryman is only glad and willing to

pay a fair and commensurate fee. Such a fee need not be large when only two or three hens, or a half dozen baby chicks are diagnosed at the veterinarian's office. Incidentally, the contacts made with farmers when diagnosing poultry diseases may develop friendly relationships which lead to calls with other types of livestock. Indiana poultrymen, as well as poultrymen in other states, have responded to this type of service and are utilizing the services of a local veterinarian to aid them in avoiding the entrance of infection into their flocks. In other words, they are using the veterinarian as the pathological "detective" to tell them quickly if any suspicious cases happen to be carriers or are in the incipient stage of an infectious disease. Such a diagnosis warns the poultryman to be on guard for any particular infectious diseases, or in other cases, it tells him that the mortality he has been having is not due to a pathogen. The fact that the poultryman spends a dollar or two for some un-needed medicine whenever his flocks appear sick or he has lost a few birds indicates that he would be only too glad to invest as much or more in the service of the local veterinarian if he thought that he had equally as good a chance of solving his problems. You and I know that his chances of solving the problems are better with an adequate diagnosis, but we must get him to feel that way and agree with us.

MEDICINE MINDEDNESS

I cannot refrain from mentioning at this point a tremendous drain on our poultry industry. I refer to the financial drain as well as a drain on the health of the flocks, represented in the expenditures for medicines and remedies which do not cure or greatly improve the situation in the flocks. It is reliably estimated that between 10 and 15 million dollars is spent annually for drugs, remedies and medicines other than the biologics of known therapeutic value. It is interesting to note that in certain sections in Indiana where we have veterinarians who have done considerable poultry practice that expenditures for such reme-

dies by the poultrymen in these areas is at a low ebb. Observation indicates to my satisfaction that as the service of the local veterinarian improves in a poultry community, the expenditures for drugs, medicines and remedies decline and the general health of the poultry in that area is improved. While I have only a relatively small number of communities upon which to base this observation I feel quite sure that it is a sound trend and that many of you practitioners should take advantage of the need of the poultry industry for your services. In short a large share of this 10 million dollar bill rendered to the poultry industry by the "medicine makers" belongs to you practitioners and is yours for the asking.

REAL SERVICES NEEDED

However, the veterinarian must have a real service to render if he asks for this expenditure, the remedy maker has mostly promises. Most certainly the poultry industry would be far better off if a large share of these millions were invested in services, particularly in diagnosis and advice regarding flock hygiene. The poultryman resorts to questionable medication because of its immediacy and as a "crutch" to carry him over the lag of delayed diagnosis. He has, at least, doctored his mind while tiding his flocks over this situation. Frequently, the disease has run its course and the maximum loss has been incurred, or still worse, the infection has spread to the young stock or neighboring flocks before the diagnosis comes to him and the essential practices are known to him. We should not condemn the poultrymen too much for this questionable medication, for I have visited in the homes of many friends, some of them professional people, and specifically several veterinarians, where I have found a large number of various drugs in the medicine cabinet. Perhaps these were only to take care of the situation temporarily, while the family physician was to be consulted later.

POULTRY PRACTICE PROFITABLE

The fact that many general practitioners

have built up a poultry practice in recent years indicates how willingly the poultrymen and farmers will turn to them with their poultry disease problems. Witness the interest that has been shown here in Indiana where the Purdue Extension Department employed a practitioner, specializing in poultry practice, who holds special extension schools on poultry pathology for practicing veterinarians. These schools were held in two areas in the state, meeting two nights a week for eight weeks. During the sixteen lectures, practically all of the important poultry diseases were discussed in detail and many autopsies held. In numerous cases, the practitioner brought in diseased specimens from the field. Over 100 practicing veterinarians have attended one or the other of these two schools; the average attendance at each of the schools running between 20 and 25 practitioners per meeting. These men would not have driven distances from 10 to 60 miles for an evening meeting unless they felt there was a real opportunity in the poultry field. Similar schools have been held in Michigan in past years under the supervision of the extension veterinarian of Michigan State College. This phase of work has been developed in Illinois and two or three of the New England States.

SPECIAL TRAINING ADVANTAGEOUS

Here is an appropriate place, I believe, to introduce a bit of testimony from one of our practitioners in Indiana, who has been attending these schools. This young practitioner graduated just a year ago and has now had one year in the field. Although he received his training at one of the leading veterinary schools he admits that his knowledge of poultry pathology was meager. He feels, after attending this extension school, that he is much better fitted to render a service to the farmers and poultrymen of his area and that he is better able to cope with the present day needs. He feels that his alma mater made a mistake in not giving more training in poultry pathology. Surely the opportunity will come to a number of the graduates of the veterinary schools to find one place or an-

other to make use of poultry pathology, since our billion dollar poultry industry is scattered throughout the nation, and chickens are found on more farms than any other class of livestock.

Many veterinarians who thought there was nothing to poultry practice and had no interest whatsoever in the humble hen now find that it is a very desirable adjunct to their general practice, and they have actually learned to enjoy their contacts with poultrymen and hatcherymen. It is high time that we work together for the best interests of that billion dollar poultry industry. If we integrate our efforts, the whole situation will be greatly improved.

LAY SERVICE WORK HERE TO STAY

I wish to touch upon another phase of the poultry practice. It might be somewhat inappropriate for me, a layman, to speak of these matters before you practitioners, but I am one of those "fools who rush in where angels fear to tread." I refer to the matter of the rapid testing for pullorum disease and the vaccination for fowl pox by the poultrymen himself. These are technics which are being learned well by the commercial poultryman or the hatchery helper. I say this with assurance, for I have seen many laymen do both of these jobs in a most effective manner. We all know that the "proof of the pudding is in the tasting," and there is no doubt that these programs are actually working in the field where the service is being done by a well trained layman. One of the leading professors in a Midwest veterinary college said that he feels that the practitioner has many important contributions to make to the poultry industry in addition to vaccinating for fowl pox and testing for pullorum disease. He feels that in many cases these tasks can be passed along to the layman much in the same way that the physician passes much of his work to the nurse or medical technician.

I feel safe in saying that vaccination and rapid testing by the laymen are practices which are here to stay. Would it not be better that the local veterinarian find in addition to testing and vaccinating, places

where he can perform services for the poultrymen and hatcherymen that cannot be performed by the laymen? However, there are and always will be many farmers who desire that the veterinarian do their vaccination and blood testing work. Many commercial hatcherymen and poultrymen do their testing and vaccinating because of the sheer cost of handling such large numbers of birds. There is much to be done by the practitioner in addition to these tasks, and his services are badly needed on these other problems, particularly differential diagnosis and advice on hygienic practices. To many poultrymen rapid testing and vaccination are much in the same category that docking and castrating lambs, castrating pigs and dehorning cattle are to the livestock farmer. He has learned to carry them on to his own satisfaction and plans to continue them as general farm practices.

In closing, let me stress the fact that the poultryman has certain very definite needs that are not being met at present. These needs are particularly, prompt, accurate, differential diagnosis, and secondly, definite, clean-cut, practical recommendations regarding the practice of animal hygiene and sanitation in the hatchery and on the farm. The poultrymen, like many others in our social order, have been turning to those who speak the loudest and boldest in their advertising for succor and relief. However, we see that he does not receive succor from the remedy maker, but is one (sucker), and the chief relief comes from being relieved of his hard-earned cash. The local veterinarian can do much to help correct this situation by assuring the poultryman that the practitioner, who must of necessity continue to serve those in a limited area, has a service that will lead to greater benefits. Through the avenue of sad experience the poultryman finally learns that treatment by the "shot-gun" approach without accurate diagnosis is in the last analysis "quackery." Must each poultryman and hatcheryman learn this lesson the hard way? Would it not be far better for the industry to be aroused to the oppor-

tunity of investment in accurate differential diagnosis and subsequent hygienic practices in the light of autopsy findings?

I boldly condemn the practice of free diagnosis which is so frequently followed by the sale of an "intestinal antiseptic" or general tonic. The poultry industry realizes that it will get what it pays for and stands ready to invest in the services of a practitioner who "knows his poultry pathology." He ponders more deeply the diagnosis and suggestions for which he has paid, than he does the results of a "free" diagnosis.

There is no one more strategically located to perform this diagnostic service and guide the poultryman in the health problems of his flocks than the local veterinarian. I bespeak of you, coöperation in this matter, and I want you to know that many educational workers are constantly "dinning" the ears of the poultrymen and hatcherymen in regard to what they should gain if they, too, would accept the coöperation and services of their local veterinarian.

Code of Wartime Practices for the Press

All who publish information or express opinions about the war are morally obligated to the standards set down by the Office of Censorship, directed by Bryon Price. Letters to the editor, advertising matter, interviews of men on leave, columnists, etc., will obey certain restrictions on material capable of rendering aid and comfort to the country's enemies.

The movement of ships, troops and airplanes, information on the weather, the strength of the armed forces, and on the production and delivery of war material are particularly singled out as subjects to avoid. In short, the dictates of common sense are to be the guide. The stake is the security of the armed forces, our homes and our liberty, as pointed out in the official document released January 15, 1942.

Some Vitamin Deficiencies of Cattle

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Williamsville, Ill.

IT WAS THOUGHT for many years that since the larger farm animals spend most of their lives in the open and eat uncooked and unprocessed foods they suffered but little, if any, from vitamin deficiencies. As our knowledge of nutrition broadened and veterinarians became more adept at diagnosing the diseases of malnutrition, vitamin deficiencies came into more prominence.

Contrary to generally accepted opinion, avitaminoses have actually increased during the last decade. Several factors have contributed to this rather rapid change. Higher producing milk animals and more rapid developing meat-producing animals are the result of greater care in the selection of parent stock and a better knowledge of animal nutrition. Both require a near perfect diet to avoid deficiencies.

The exacting and in many cases apparent, inconsistent demands of the consuming public has also entered into the occurrence of these troubles. For instance, the housewife demands dairy products with a distinctly yellow color, and at the same time asks for eggs with light colored yolks and beef with a perfectly white fat. The yellow color of milk, cream and butter, the yellow tinge of meat animals, and the yellow yolk of eggs all depend for their color largely upon their carotene content, which in turn is derived from the feed consumed. In attempting to meet these requirements the dairyman has added Jersey and Guernsey cows to his herd. The latter is notorious for her lack of ability to process carotene into vitamin A. Consequently, her milk carries a large percentage of carotene, which gives the cream and butter that much sought yellow color. This faculty of the Guernsey is largely responsible for the unprecedented calf scours encountered in this breed. The same is true to a slightly less extent with the Jersey. Since the newborn

calf cannot change the carotene in the milk to vitamin A, it develops a deficiency of this vitamin, manifested by scours or pneumonia which all too often is fatal.

The administration of vitamin A (not carotene) to newborn calves will do much to avert scours and pneumonia. One-half ounce of cod liver oil a day for the first week has proven satisfactory in several herds where this trouble is prevalent.

A AND D DEFICIENCY: ITS CAUSES

Vitamin A deficiency of cattle in the feed lot has become more prevalent during the last few years for several reasons. To understand the cause or causes leading to the increase in this trouble it is necessary to have a fair knowledge of the common feeding practices carried out in the corn belt. In the first place, comparatively few beef cattle are actually raised and finished in the cattle feeding sections. Most of them come from the southwestern states: Texas, Oklahoma, Kansas, New Mexico, and of late years many from old Mexico. When brought in they usually weigh from 200 to 400 pounds. Some larger cattle are finished, but in these because the feeding period is shorter no deficiencies are seen, except possibly calcium. We are interested primarily in the man who feeds over a long period of time with the object in view of producing prime beef cattle that may top the market. The feedlots are filled during the late fall or early winter months—usually November through January—with calves from what we call the range country. In the short grass range country there is often a dearth of green vegetation in the late summer and fall months. Consequently, these calves enter the feed lots when their store of vitamin A and carotene is low. It should be remembered that sufficient vitamin A or its precursor (carotene) is stored in the body to last various lengths of time, depending

upon the previous ration received and the age of the animal. Younger animals deplete in a much shorter time than the more mature ones. Calves deplete faster than yearlings.

In experiments conducted at Spur, Texas, reported by J. H. Jones, *et al.*,¹ short yearlings and calves were depleted in from 90 to 231 days when a carotene free ration was fed. The average time required for each of the three years were 136, 138 and 142 days, respectively. Thus we see that calves in the feed lot for approximately one year are sure to suffer from vitamin A deficiency unless some provision is made to supplement the usual feedlot ration.

The usual ration consists of shelled yellow corn, one of the vegetable protein supplements such as soybean meal, cottonseed meal or linseed meal, and straw. Of late years soybean meal has been used quite extensively. Most feeders also feed about one-tenth of a pound of limestone per head each day to balance the phosphorus in the soybean meal and to prevent a calcium deficiency. The cattle are kept in a dry lot. Few feeders use any kind of hay for roughage. Timothy hay is not generally available and it is thought that legume hays tend to cause bloating.

Such rations contain practically no provitamin A except the small amount of carotene and cryptoxanthin present in yellow corn which is entirely inadequate to sustain rapidly developing calves. It also contains a minimum amount of vitamin D. The almost total absence of these two factors combined with long periods of cloudy weather during the winter months explains in a large measure why these two deficiencies are so often seen in the same herd.

YELLOWISH FAT OBJECTIONABLE

The common belief among feeders that cattle should not be allowed green cured hay or grass if prime beef is to be pro-

duced is the result of prejudice on the part of the consumer against beef with a slight yellow tinge in the fat portion. This slight yellow color is stored carotene. In order to meet this, special consumers demand the feeder has learned that he must feed his cattle in such a way as to literally starve them of vitamin A; hence the low vitamin A ration.

STORED CORN INCRIMINATED

The greater prevalence of vitamin A deficiency during recent years has not been due to any radical change in feeding methods but rather to the general practice of storing corn, and to a lesser extent of storing hay. Yellow corn² and alfalfa hay³ lose about 60 per cent of its carotene content during the first seven months of storage. Approximately 75 per cent is lost in 12 months. The loss is considerably less in winter than in summer and varies with the air currents.²

Strange as it may seem, a medium vitamin A deficiency does not materially retard the rate of gain in calves on full feed. We see many totally night blind herds that show but little ill effects from it from the standpoint of gains. The animals lose weight only after the deficiency becomes severe. We are usually called when the animals exhibit decreased body weight to such an extent that the owner becomes alarmed.

Symptoms.—Ordinarily the first symptom is night blindness or inability to see in dim light. When animals are in a barn or shed they can be driven into the wall or manger. Sometimes they will run into one another.

Vitamin A deficient calves turned on green grass will often develop an intensely acute laminitis. Some will refuse to get up. They will lie down most of the time but eat and drink almost normally. This

¹Jones, J. H., Riggs, J. K., Fraps, G. S., Jones, J. M., Schmidt, H., Dickson, R. E., Howe, Paul E., and Black, W. H. Carotene Requirements for Fattening Beef Cattle. 1938. Record of Proceedings of The American Society of Animal Production.

²Fraps, G. S. and Freichler R. Effect of Storage on Vitamin A in Dried Foods. Ind. Eng. Chem. xxv (1933), p. 465.

³Taylor, M. W. Stability of Provitamin A in Alfalfa and Silage, 1934. New Jersey Agricultural Experiment Station Bul. 16 No. 63.

condition is often seen in the spring months.

In the feedlot, a diarrhea and excessive secretion from mouth, nostrils and eyes are observed. Dribbling of urine from steers, night blindness progressing to day blindness with xerophthalmia, and going off feed, follow. Quite often the first symptom is lameness in several animals showing swelling of the legs below the carpal and tarsal joints. If measures are not taken to correct the deficiency the edema will extend to the scapular region, neck, hips and even over the entire body, if death does not occur. In some animals, the swellings reach enormous proportions. Some will develop immense swelling of the legs and body without showing xerophthalmia. Others will show severe eye lesions with little noticeable swellings. Because of impaired vision and general disturbance of the nervous system affected herds appear wild and nervous. They will suddenly get up and run to the far side of the lot when approached. They are irritated by noise or any disturbance. Urinary calculi are frequently found in these herds. In bad cases, the eyes may be damaged beyond repair even when a diet rich in vitamin A is supplied. The animals may remain permanently blind from pinching off of the optic nerve in the optic foramen. The ulceration of the cornea will either rupture the eyeball or leave scars that greatly interfere with vision. *Post mortem*, large, subcutaneous hemorrhages resembling bruises will be found. Smaller hemorrhages and serous infiltrations are prominent through the carcass.

Judging from the edema that appears regularly in naturally occurring vitamin A deficient cattle and the tendency of such animals to develop laminitis it would seem that vitamin A is vitally concerned in the cutaneous circulation. The frequent occurrence of diarrhea in vitamin A deficient herds that are being fed soybean meal leads many cattle feeders to believe that soybean meal is objectionably laxative.

⁴Edward A. Kane, Herbert G. Wiseman and C. A. Cary. The Loss of Carotene in Hays and Alfalfa Meal During Storage. *Journal of Agricultural Research* 4v (1940), p. 843, No. 11, page 843.

Treatment consists in either giving vitamin A or supplying the animals with feed containing sufficient vitamin A active carotinoids. Turning on green grass of course would serve the purpose ideally, but few feeders would seriously consider such a suggestion. Three pounds of fresh, green cured alfalfa hay each day per steer has proven satisfactory. Hay more than one year old is of questionable value. As previously stated 60 per cent or more of carotene in alfalfa hay is lost during the first seven months of storage. Sunburning or rain damage greatly accelerates the loss. Color is not a sure index of the vitamin A value of hay or grains if the products are old, although it is a good sign in fresh hay and grains. When stored, the carotene content of alfalfa hay is lost approximately three times as fast as the green color. After a week on alfalfa hay, a marked improvement is noticeable.

Breeding cattle that live on the stalk fields or on poor quality of hay during the winter always suffer from a vitamin A deficiency, even when they are fed yellow corn. Many of the abortions, retained placentae, and weak calves that are prone to develop scours and pneumonia, so often seen in the spring are the direct result of insufficient vitamin A. Diagnosis can usually be made on clinical evidence supported by a history of having been fed a low vitamin diet.

Vitamin D deficiency and rickets are constantly observed in calves during the winter and spring months. Partly because of more confinement to barns during cold weather and partly due to the greatly decreased amount of ricket-preventing rays of the winter sun. The feed of calves born in the late fall and winter months should always be fortified with some vitamin D concentrate.

Arched back, unthriftiness and rough coat are the usual symptoms. Fractures of the long bones and tetany are not uncommon. This trouble is seen more often in dairy calves than in beef calves. A rickety

Livestock Marketing Problems*

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AT FIRST GLANCE, livestock marketing appears to be a relatively simple matter. Actually, effective marketing of slaughter livestock is more complex, more difficult, than the marketing of any other major agricultural commodity. Moreover, it is the most important of the farmers' marketing problems because the crops produced on over three-fourths of the land farmed in the United States, are marketed in the form of slaughter livestock.

Problems are many in the field of livestock marketing. A brief paper can mention but a few of them. Your secretary, Doctor Spencer, has suggested that my paper be developed from the standpoint of livestock producers and of veterinarians—having also in mind the other papers being presented on this sectional program.

Accordingly, five problems in livestock marketing will be mentioned here, viz.:

- (1) Effective selling.
- (2) Livestock marketing costs.
- (3) Excess markets, surplus marketing machinery.
- (4) Identification of quality in meats.
- (5) More adequate information on livestock marketing.

1. EFFECTIVE SELLING

A major recent development in livestock marketing has been the increasing central-

ization in livestock buying on the one hand, the rapidly increasing decentralization in livestock selling on the other.

While there has been much talk about decentralization of the meatpacking industry, the truth is that ownership and control has tended toward greater centralization. The result is that buying of slaughter livestock is probably more centralized today than at any previous time, all factors considered.

Of the United States total federally inspected slaughter in 1937, four concerns—four buyers—took 5 of every 10 hogs, over 6 of every 10 cattle, 7 of every 10 calves, and 8 of every 10 sheep and lambs.¹ So, no matter where or how producers sell, approximately 2/3 of all meat animals slaughtered under federal inspection go to one of four buyers.

How different is the setup on the selling side. Last year, 1940, 25 per cent of the cattle, 39 per cent of the calves, 53 per cent of the hogs, and 36 per cent of the sheep and lambs (U. S. fed. inspected slaughter) were sold outside the public stockyards—were not offered for sale in the public markets. Consider the multitude of local buyers, of local stockyards and concentration yards and auction markets and packing plants, through which producers disposed of this livestock and one begins to appreciate how far decentralization in livestock selling has gone.

A further point should not be overlooked. The buying is largely done by trained buyers, operating under instructions from the best trained and best informed men in the livestock buying field. But more and more of the selling is being done by men without much training or experience in the selling field, frequently without adequate market information.

It is extremely doubtful that livestock

*An address before the annual meeting of the American Veterinary Medical Association, section on Sanitary Science and Food Hygiene, Indianapolis, Indiana, August 13, 1941.

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(Continued from preceding page)

calf seldom if ever develops into a valuable member of a breeding herd.

There are many other vitamin deficiencies of cattle but those mentioned are most often met on the farms of central Illinois and it should be readily recognized by practitioners.

¹See "Market-Sharing in the Packing Industry," William H. Nicholls, Journal of Farm Economics, February 1940, pp. 225-240.

producers can expect effective selling on the present basis of:

- (a) Centralized buying vs. decentralized selling.
- (b) Trained and organized buyers vs. untrained and unorganized sellers.

A recent contribution bears directly on this point, a paper by H. H. Hulbert, presented before the 1940 Institute of Cooperation. In it he reported his analysis of the purchases of over 200,000 hogs by one plant—bought direct at the plant, through concentration points, and at the terminal market. Note two excerpts from that paper. "Hogs purchased direct at the plant cost 18 cents less per cwt on the average than similar purchases made at local concentration points and yielded two pounds more meat for each hundredweight of live hogs purchased;". Also this: "After reviewing much of the material on direct marketing and making some investigations of my own, I have reached the conclusion that direct marketing has grown because some packers have found it to be the cheapest way for them to obtain livestock."¹

2. LIVESTOCK MARKETING COSTS

More has been spoken and written about livestock marketing costs than about any other aspect of livestock marketing. And most of that discussion has been directed toward a mere fraction of the producers' marketing costs—that part between the feedlot and the packing plant.

For the year 1932, the Illinois Agricultural Experiment Station developed information showing that the expense incurred between the feedlot and the packing plant represented less than 15 per cent of the total spread between producers of livestock and the consumers of meat.²

The most complete study yet made in this field shows even a smaller proportion of the total producer-consumer spread as occurring on the producers' side of the

packing plant. Tobin and Greer report,³ for the 10 years 1925-1934, the dollar spent at retail for meat and other edible animal products to have been distributed approximately as follows:

- \$1.00 spent at retail.
- 0.26 to the retailer.
- 0.05 to the wholesaler.
- 0.15 to the processor.
- 0.04 for livestock marketing.
- 0.50 to the livestock producers.

The producers' total marketing expense was 50 cents, but only 4 cents of that amount was incurred between the feedlot and packing plant. Dividing 4 by 50 gives just 8 per cent as the proportion of the total marketing cost incurred between feedlot and packing plant.

MARKETING COSTS PAID IN MANY WAYS

Unfortunately, most of the discussion of marketing costs has dealt only with those livestock marketing costs that are paid in cash—what I designate as direct marketing cost.

Indirect marketing costs may far exceed the direct costs, are given far too little attention. What I term indirect marketing costs may be paid, are paid, in any of the following ways:

- (1) Price differentials.
- (2) Differences in sorts, in grading.
- (3) Inaccurate or unfavorable weights.
- (4) Lack of buying competition.
- (5) Lower price level.

I would gladly furnish specific illustrations of each of these but the time allotted to this paper does not permit. Hence one general illustration must suffice.

It is commonly said that where the producer pays no yardage or commission he has no marketing expense. In a recent conversation with a representative of the Iowa packing industry the question of price differentials came up. Asked how Iowa hog prices compared with Chicago prices he said they were usually 25 to 35 to 50 cents per cwt lower. Then he added, because of our favorable freight rates on fresh meats into the Chicago market we

¹"Practices in Livestock Marketing—An Appraisal," by H. H. Hulbert, American Cooperation 1940, pp. 614-624.

²Illinois Agricultural Experiment Station Bulletin 408, p. 498.

³"What Becomes of the Consumers' Meat Dollar," Tobin and Greer, University of Chicago Press, p. 4.

ould—if competition required—buy our hogs only 15 cents under Chicago and still operate on a parity with Chicago plants.

Say Iowa markets 10 million hogs a year, 75 per cent sold direct to packers. If you think producers pay no marketing cost on those hogs just figure what only 10 cents per cwt amounts to on $7\frac{1}{2}$ million hogs, per year.

3. EXCESSIVE NUMBER OF MARKETS

Livestock producers are maintaining at least three times as many markets as are needed to sell their slaughter livestock. Take any cornbelt state, mark on its map all its livestock markets—local stockyards, concentration points, auctions and others. Then locate points on the map just 50 miles apart and see how many you get. Why should there be more?

Very few local markets can operate at an expense of less than \$300 per month—\$3,600 per year. It costs from \$6,000 to \$10,000 per year to operate most local stockyards. If the industry supports twice as many markets as are needed the bill is

paid by just one pocketbook—that of the livestock producer.

Moreover, leading livestock buyers tell me there is no question but that the operation of so many local markets tends to weaken the bargaining power of livestock sellers, thus to lower livestock prices.

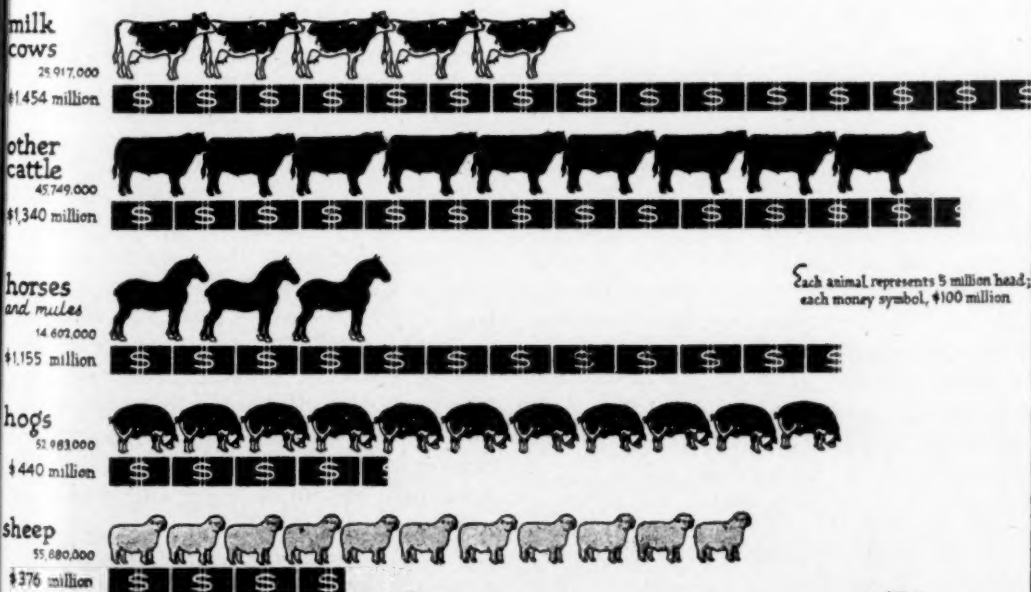
There is much more to this matter of livestock marketing costs than most producers have recognized.

4. IDENTIFICATION OF QUALITY IN MEATS

Consumers know less about meats—about how to recognize quality in meats, how to buy meats to advantage—than about any other major food. In my opinion producers can scarcely expect a fully effective job of livestock selling until the consuming public is able to do a better job of buying meats.

During the last three years representatives of the Illinois Agricultural Experiment Station have interviewed 470 retail meat dealers, 351 consumers, as to their attitudes toward and their knowledge of government grade-stamped and packer-

ANIMALS on U. S. Farms... their number and value



SOURCE—U. S. Department of Agriculture

Continued

branded beef. The results of these investigations should be available in bulletin form within a few weeks.

A majority of both retailers and consumers favored the adoption of some understandable and dependable system whereby they could be assured as to the quality of the beef sold by the first group and bought by the second group. A large majority of the retailers said they found government grading more dependable than packer branding, that quality was more uniform in government-graded than in packer-branded beef.

It is significant that of all the beef produced under U. S. federal inspection in 1940, over 11½ per cent was graded by federal beef graders.

Much more will be heard in the near future about this need of identification of quality in meats—from the producer clear through to the consumer.

5. MORE ADEQUATE INFORMATION

Without question producers now have more information on livestock markets and marketing than they have had before. But if you consider the thousands of individual producers, selling their livestock to trained and informed buyers, it is clear they need more complete information.

First, too few livestock producers are informed as to how livestock prices are established, what factors influence prices, how producers may and do influence livestock prices.

Second, producers need much more information regarding the meat packing industry—the attitude and relationship of different groups of packers toward the livestock markets and methods of livestock marketing; the part different groups of packers play in maintaining buying competition on the public livestock markets; the parts different groups of packers play in maintaining and broadening consumer demand for meats.

Third, producers need a clearer understanding of all that is involved in livestock marketing costs, where they are in-

curred, and what can be done to reduce them.

CONCLUSION

In conclusion, effective marketing is a complicated and difficult job. To experienced marketing men it does not seem probable that the present trend—increasing decentralization in livestock selling, with more and more of the selling in the hands of untrained and unskilled sellers—can result in more effective selling.

While a major portion of producers' attention has been directed toward marketing costs many of them have neglected or ignored a major part of the problem.

Far too many livestock selling points are being maintained. The job could be done at less total expense, more effectively, by patronizing only those selling points that are really needed to do the job.

Identification of quality in meats, clear through to the consumer, is much needed. Adoption of such a system, training consumers to use it would benefit the entire industry.

Finally, if more and more livestock producers are to undertake the selling of their own livestock, they need more adequate and more complete livestock marketing information. Otherwise, they will do a less effective job of selling than is required, and all producers will be penalized because of their incompetence.

Changes in Eating Habits

The consumption of canned food has almost tripled during the past 20 years.

Among the meats the greatest increases were in chicken and turkey. The consumption of chicken soared from 329,500,000 lb. in 1929 to 427,000,000 lb. in 1939, while during the same decade, turkey consumption went from 31,400,000 lb. to 112,000,000 lb. Other foods that made remarkable increases are cheese, sausage, potato chips, chocolate, peanut butter, and evaporated and condensed milk.

"Fall In" is the name of a new booklet issued by the American Legion. So, let's

Testosterone Pellet Implantation in the Gelding

WALTER M. KEARNS, M.S., M.D.

Milwaukee, Wisconsin

ANIMAL EXPERIMENTATION and human application of the sex hormones have revealed some phenomenal reactions. As the chemists developed these synthetic steroid hormones, exact duplicates of human glandular secretion, numerous interesting reactions have been brought about demonstrating their potency. Male and female castrated animals have been returned to masculinity and femininity at will. The female hormone has been used in the male and the male hormone in the female to bring about the development of changes characteristic of the opposite sex as well as depression of the normal functions of the treated sex. In the female guinea pig the male hormone—testosterone—has brought about resolution of endometrial hyperplasia artificially produced with a female estrogenic hormone. London workers have brought about the development of a prostate gland—a male organ—in the urethra of the castrated female monkey by the administration of testosterone—a typical prostate gland developed in the vestigial structures normally present in the female urethra.

The investigation of the startling effects of these hormones in human beings naturally lags far behind laboratory demonstrations in which castrated animals are used to assay the degree of activity of various hormone preparations. Many of the phenomenal results obtained in bioassays will never be duplicated in the human. However, many varied applications have taken place in human clinical practice. In young girls entering puberty, testosterone has postponed menstruation for indefinite periods. In adult women, it has delayed the onset of menstruation for a number of days; it has relieved painful menstruation, excessive menstruation, and painful breasts; it has brought about menopause; and it has caused cessation of lactation in nursing mothers. These results are proba-

bly brought about by depressing the activity of the anterior lobe of the pituitary gland. In spite of the fact that these apparently beneficial results are obtained, the danger of testosterone producing masculinizing effects in women must be borne in mind. Undesired reactions have been reported. Atrophy of the breasts and the development of a mustache and beard are a high price for any woman to pay for relief of dysmenorrhea when the beneficial results are obtainable with the judicious use of the female hormones unaccompanied by undesirable effects.

Clinical reports indicate equally amazing results when the order is reversed and the female hormone is given to the male. Charney has recently brought about correction of abnormal sex desire in a male sexual criminal by the administration of large doses of the female hormone. There also occurred in this criminal a cessation of spermatogenesis with degeneration of the germinal epithelium which was proved by a testicular biopsy. In this instance, testosterone might have accomplished the same result, as depression of sperm formation has been frequently demonstrated after the administration of huge doses of testosterone to normal men.

These interesting reactions are noted in order to demonstrate the tremendous potency of the sex hormones. It is my opinion that the crossing of hormones in the sexes should be carried out with some reserve.

In all hormonal therapy there is probably no more dramatic effect observed than the complete rejuvenation which is brought about in human male castrates by the administration of the testicular hormone, testosterone. Symptoms of weakness, exhaustion, nervousness, and lack of sexual desire are relieved with relatively small doses. The lack of sexual desire and sexual power ordinarily gives these patients little con-

cern. They appreciate relief from mental depression and anxiety and from general muscular weakness and fatigue. They are changed from shy, apprehensive, depressed individuals to hopeful, cheerful, interested, social beings

In our experience with testosterone, the results on improved muscular endurance and increased resistance to fatigue in the nervous system were the most striking and consistent effects obtained (fig. 1). It was these remarkable results on endurance in human castrates which suggested experimentation with castrated male horses.

EXPERIMENT ON HORSES

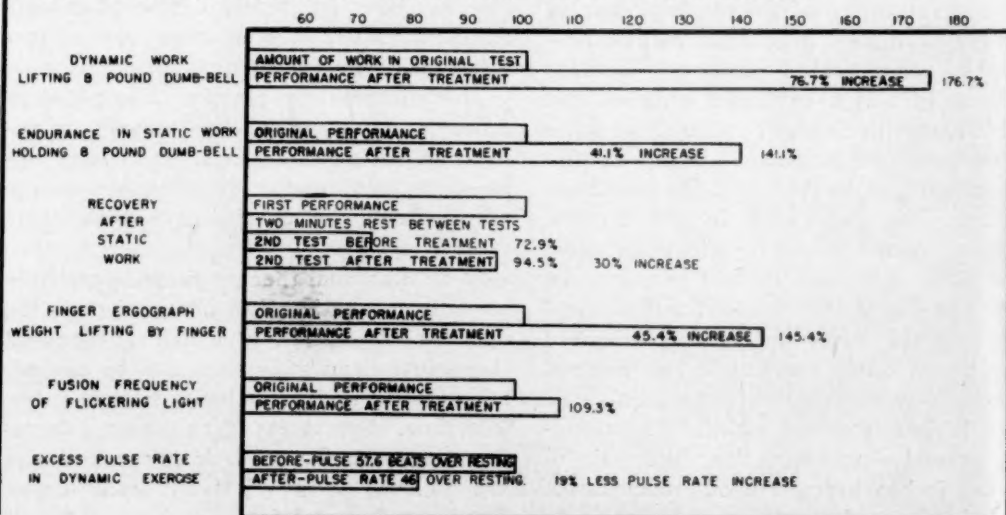
While the possibility exists that replacement of testicular hormone may bring about a return of the characteristic, unmanageable, viciousness of the stallion, it was reasoned that, nevertheless, the racing gelding would be an excellent animal upon which to study the effects on endurance. In the whole animal kingdom endurance is best measured in this species. The race

horse is bred for speed and endurance for many generations. He is properly conditioned for his maximal effort and again and again his speed for a mile is measured in split seconds. While the gelding is apparently less affected by removal of his testicles than most other animals, it is true that his muscular system is affected. This varies in different geldings. Some retain good endurance and some only a fair amount of stamina. Others, after careful training, are entirely lacking in spirit, or while willing, are able to run only about one-half mile at good speed and then tire badly.

Apparently, the entire horse holds the edge over the gelding in both harness and running races. All of the Hambletonian races have been won by entire horses except one running. Practically all of the records are held by stallions. Among the thoroughbreds, practically every record is likewise held by stud horses. The Kentucky Derby was won by geldings only two or three times in 60 years.

It was presumed that testosterone might

RESULTS IN MEASUREMENTS OF EFFECTS ON THE NERVOUS AND MUSCULAR SYSTEMS OF THE ORAL ADMINISTRATION OF 100 MGS. OF METHYL-TESTOSTERONE DAILY. MEASUREMENTS WERE MADE ON FOUR PATIENTS—TWO CASTRATES AND TWO TYPICAL EUNUCHOIDS. THE AVERAGE PERCENTAGE GAIN OF THE FOUR PATIENTS IS RECORDED IN EACH TEST. MEASUREMENTS WERE REPEATED TWICE BEFORE INSTITUTION OF THERAPY AND TWO TESTS WERE MADE AFTER THREE WEEKS OF TREATMENT.



exert a valuable therapeutic effect in well-bred geldings possessing great potentiality for speed and endurance, but whose performances after castration were disappointing. Also, in older geldings which had lost their speed or finishing power, rejuvenation was considered possible.

The most readily available horse to us, considering expense as well as the horse's tendency to tire badly, was the 18-year-old pacer, Holloway. For the two previous seasons, Holloway declined to a marked degree in his staying power and during February of 1941 in several attempts at ice racing, failed to show any of his old speed or willingness. Calvin Dillon, a 13-year-old gelding which had not raced for several years, was also acquired. After several pellet implantations of testosterone, this horse improved markedly. His appetite improved, he gained weight, his coat brightened, and in training he gradually developed speed timed at 2:13. However, as his general condition improved, because he became more fractious and disagreeable, experimentation was not carried out.

In Holloway, the response was remarkable. On June 12, 525 mg. of testosterone

(Oreton by Schering) were implanted under the skin. Promptly, he developed a great deal of spirit and anxiety to exercise. The coat which had become very thin over his face and various parts of the body immediately started to return. He developed firm muscles and frequent erections. He was trained daily. It was decided to encourage him to trot and enter him in the races as a green trotter since his earnings as a pacer required his entry into the free-for-all class where competition would be possibly too keen. He steadily improved in his daily workouts and on several occasions in the latter part of June was clocked in 2:08. Through the summer in 23 heats, he finished first in 5, second in 5, third in 3, fourth in 6, and established a trotting record of 2:10 at 19 years of age. His second implantation of Oreton pellets was made on July 12 when he received another 525 mg. Another implantation of 525 mg. was made on August 25. He did not race following this last implantation due to a quarter crack in a hind foot but he continued in excellent condition and showed marked stud-like behavior without being vicious. In mid October he served the racing mare,

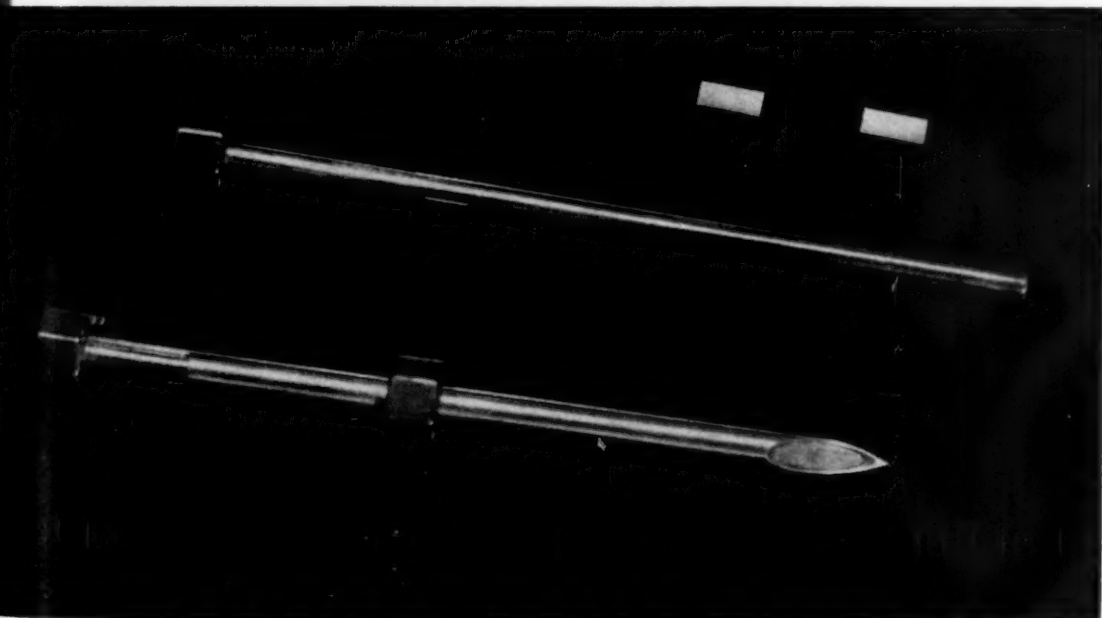


Fig. 2—Plunger and trocar employed to deposit the pellet.

Highlawn Empress. Being a gelding, there was, of course, no possibility of impregnation. He was permitted to mount the mare to demonstrate his sexual power.

Two running horses were treated with testosterone. One of them, the 7-year-old gelding, White Front, was below weight and listless. He received 150 mg. of testosterone in March of 1941 following which he did the best running of his career, showed excellent staying power, and improved his record at distance running during the spring and summer of 1941. This horse received only the one implantation. Another 6-year-old gelding, Doctor Longwood, was implanted with 300 mg. of Oreton pellets in August of 1941, following which he improved in general condition and after several excellent workouts, including one-half mile in 0:47 easily, left for the races. For some reason, known to his owner, he was not allowed to race after arriving at the Arlington Park Jockey Club near Chicago. During the ensuing two months he won a number of derby races at various fairs, demonstrating excellent finishing power. This gelding received only the one treatment.

These encouraging results with testosterone implantation have led us to plan some further implantation with properly chosen trotting geldings at the Wisconsin State Fair Grounds this spring. It is planned to administer smaller doses in the future. Implantations of three Oreton pellets of 75 mg. each totaling 225 mg. every two months apparently will suffice to bring about all of the desired effects without excessive stimulation.

The implantation of pellets has been simplified by the development of a small trocar (fig. 2) and the manufacture of small cylindrically-shaped pellets* which are molded to the inner caliber of the trocar to permit their ready passage through it. An area over the withers is saturated with alcohol. The well-beveled trocar is thrust through the skin in a downward direction into the subcutaneous tissues for a distance of about two inches; the stylet is removed and three or more pellets placed in

the trocar and pushed into the subcutaneous tissue with the blunt obturator. The instrument is withdrawn leaving the pellets imbedded in a pocket approximately an inch below the skin puncture. The depth of the pocket and the dependent location of the pellets in relation to body posture obviates their extrusion and insures safe lodgement of the pellets.

The pellets are readily felt under the skin. The gradual diminution in size is an indication of the rate of absorption. The trainer is instructed to carry out a daily massage of the area to increase the rate of absorption when this is advisable. The final disappearance of the thickening is evidence of complete absorption and coincides with the waning spirit and performance of the gelding.

Testosterone has been proven effective when administered by various routes. The four most common methods are (1) subcutaneous injection in oily solution (Oreton), (2) application to the skin in the form of ointment (Oreton-M topicators), (3) by mouth in the form of tablets (Oreton-M tablets), and (4) in the form of compressed pellets (Oreton-F pellets).¹⁻⁵

In the choice of a method, pellet implantation offers the ideal method of maintaining replacement therapy in geldings which require, and are dependent upon, the hormone over long periods—in fact, for the remainder of their racing days. The method entails the least inconvenience to the gelding and to the veterinarian. The absorption of the pellets takes place at a rate necessitating repetition of treatment at intervals varying from two to three months. With the introduction of the new trocar, the method is as simple as an ordinary hypodermic injection without the use of the scalpel or the suture needle.

There is apparently no reasonable objection to the use of testosterone in racing geldings. Certainly no legal complications could arise from its administration because in no sense is testosterone a drug or stimulant. The illegal and unsportsmanlike use of drugs like heroin, caffeine, or alcohol excites the animal to an abnormal and possibly harmful exertion, followed by late ill

effects. On the other hand the administration of testosterone replaces in the animal a normal constituent of his body which nature intended for him and supplied through the normally functioning testicles before man removed them. In geldings who exhibit signs pointing to a need of this hormone, it supplies a long term effect in his reconditioning. Along with the administration of vitamins, iron, and other minerals it belongs in the category of sound therapeutics.

[Whether racing commissioners would regard this type of "stimulation" as unfair to untreated geldings is a question only they can answer.—Ed.]

*My thanks are due Dr. Max Gilbert of the Research Department of the Schering Corporation for his aid and advice in developing the trocar and Oreton pellets which are supplied in 75 mg. size. The trocar design with hexagonal shoulders and flanges to prevent rolling was modified for us by the Beckton-Dickinson Company.

*Kearns, Walter M.: The Clinical Application of Testosterone, *Journal of American Medical Association*, cxlii (June 1939), pp. 2255-2258.

*Kearns, Walter M.: Oral Therapy of Testicular Deficiency, *Journal of Clinical Endocrinology*, I, i (Feb. 1941), pp. 126-130.

*Simonsen, Ernst, J. A. Kearns, Walter M., and Enzer, Norbert: Effect of Oral Administration of Methyltestosterone on Fatigue in Eunuchoids and Castrates, *Endocrinology*, 28, 506-512, March 1941.

*Kearns, Walter M.: Testosterone in the Treatment of Testicular Deficiency and Prostatic Enlargement, *Wisconsin Medical Journal*, September 1941.

*Kearns, Walter M.: Pellet Implantation of Hormones in Urology, in press, *Journal of Urology*.

Safe Disposal of Ships' Garbage

A number of queries have been received with reference to the statement in the January, 1942, *Journal*, page 95, entitled "Closing Gaps Against Foot-and-Mouth Disease." These queries are based on, (1) why the steamers do not burn their garbage overboard at sea is considered a dainties where foot-and-mouth disease exists, and (2) why such garbage is not dumped into the ocean before reaching the territorial three-mile limit.

The first query may be answered by stating that only a relatively few ships are equipped to burn garbage as the majority

of them today are oil burners. Referring to the second query, the dumping of garbage overboard to sea is considered a dangerous practice by naval authorities since the floating garbage may leave a trail which would disclose the recent position of a ship with possible resulting attack, especially by the enemies' submarines.—*John R. Mohler*.

The Question of Correcting Mistakes (=Errata)

When a periodical sets out methodically to make its succession of issues a chronological story for the benefit of posterity, some bad arithmetic sometimes creeps into the columns of figures hastily compiled. One of these blunders that editors generally attempt to smooth out under the name of "errata" went into page 140 of the February issue where our mathematics gave the number of turkeys in the United States last year as 700,000,000 valued at \$16,000,000, or about 23 cents a piece. Chief John R. Mohler of the BAI takes time out to remind us that the number of turkeys should have been given as 7,030,000 and the value as \$16,000,000, which brings the per head value a little over \$2.00. So, to keep facts straight change 700,000,000 to 7,030,000 in the last entry on the row of figures (*vide*, p. 140, Feb., 1942.)

In regard to the question of correcting *errata* in subsequent issues, readers are entitled to know that only flagrant or serious errors are thus corrected. The absence of an errata column in the *JOURNAL* is due to a relative absence of mistakes to correct. But corrections are always made when misinformation printed is of the serious type as in the case cited above, incorrect dosage or objectionable personal items, etc.

There is no such thing as dry rot. All fungi of decay must have moisture, says the USDA, but some fungi form "pipe lines" for moisture from surface to interior.

The New Federal Food, Drug, and Cosmetic Act and Its Relation to the Veterinarian

LEWIS E. HARRIS, B.Sc., M.Sc.,*

Lincoln, Nebraska

THE FOOD and Drugs Act of 1906 was enacted to regulate certain phases of drug manufacturing and the handling and distribution of drugs. Many persons, in various branches of medicine, did not know that such a law existed and those who did know about it were mostly uninformed and uninterested in its details.

The 1906 law was a negative one, that is, it enumerated a few things which could or could not be done and was rather vague in all sections. In contrast, the new Act passed in 1938 states specifically what may or may not be done and includes sections which have broad coverage. For example, Regulation (a) under Section 502 (f) states, "Directions for use may be inadequate by reason (among other reasons) of omission in whole, or in part, or incorrect specifications of . . ." a wide variety of methods of administration and dosage.

Furthermore, the administration of the Federal Security Agency is empowered to set up regulations from time to time and such regulations have the power of law. Certain regulations require public hearings. Other regulations "for the efficient enforcement" of the Act, which are promulgated pursuant to section 701 (a), do not require public hearings. A number of regulations of each type have been issued.

Previously, some veterinarians, physicians, dentists and pharmacists took the attitude that the 1906 law did not affect them in any way and, therefore, they paid no attention to it. Probably this was a proper attitude since the 1906 Act was not specific. However, it is unfortunate that these same persons have taken the same disinterested attitude toward the new Act. Most professional persons believe the Act is di-

rected at manufacturers only. In this connection it is well to point out that the new Act mentions specifically "physicians, dentists, or veterinarians" time after time.

The new Act has "teeth in it" and the Food and Drug Administration is going to use every possible means to enforce it. Hundreds of investigations are being conducted at the present time. While the Act always refers to the "physician, dentist, and veterinarian" we, in this discussion, are only concerned with the veterinarian. Therefore, reference is made only to the veterinarian in this article. Since every effort will be made to enforce it, and since this new Act does definitely apply to the veterinarian, surely it deserves serious consideration and study.

HISTORY

Since 1933, there has been agitation in Congress for the passage of a new Food and Drug Act. However, most legislators did not believe it was of sufficient importance and, therefore, pushed it aside so

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*Director, Research and Control Department, Norden Laboratories, Lincoln, Nebraska.

that other legislation could be considered. The "Elixir of Sulfanilamide" case again focused attention on the need for a revision of the Food and Drug Act. Sufficient pressure was brought to bear by interested groups so that the new act was passed and became effective June, 1938. The "new drug" and "dangerous drug" provisions became effective immediately, but a six month readjustment period was allowed in connection with other sections. However, during that six months the Secretary of Agriculture announced new regulations containing such radical changes that it was necessary to extend the adjustment period to twelve months and, on some special phases, to eighteen months. The Act is now completely effective. We can all easily recall the confusion which existed during that adjustment period—names of manufactured products were changed, directions for use and indication statements were modified, some products contained labels which bore no dosage statements, warning statements were added, etc.

New regulations are still being promulgated but these are gradual and do not necessitate major changes as have been necessary in the past.

Sections of the Act Which Directly Affect the Veterinarian

The one Section of the Act which is most applicable to the average practicing veterinarian is 503. This outlines and defines the exemptions which are allowed on the label of drug products dispensed by him or on his prescription.

Because practically all veterinarians find it more desirable and advantageous to dispense their own drugs rather than to write prescriptions, Section 503 is of particular interest to them.

This section exempts a drug dispensed by or on the prescription of a veterinarian, from label requirements of statement of name and address of manufacturer; weight, measure, or numerical count; name of the drug, and statement of active ingredients. These exemptions are effective only if such veterinarian is licensed by law to administer such drug and if such drug bears a

label showing the name and address of the dispenser, a serial number identifying the drug dispensed, the date, and the name of the veterinarian.

LABELING BY THE VETERINARIAN

Since almost every veterinarian prescribes and dispenses his own drugs, he is both the prescriber and dispenser and, therefore, the label need only bear his name and address, the date, and the serial number.

It should be emphasized that it is absolutely necessary that the serial number be placed on the label and that the case record bear the same number together with a notation of the type and quantity of the drug dispensed. This serial number originates with the veterinarian and *is not* a number which may be placed on the label by the manufacturer. Many manufacturers have designed labels for products, which lend themselves to dispensing, so that the top label may be torn off leaving a dispensing label on the product. The dispensing label contains general directions and has a form for use by the practitioner in entering his name, address, date, and serial number. If this form is not present on a dispensing label or if a plain label is used, the above required information should be placed on such labels in a conspicuous manner. It is assumed, of course, that the veterinarian will give adequate oral directions and warnings to the client in addition to the general directions which may be printed or written on the drug label.

NO EXEMPTIONS ON MAIL ORDERS AND RE-ORDERS

None of the above exemptions apply to a drug dispensed in the course of conduct of a business of dispensing drugs pursuant to diagnosis by mail. In other words, the exemptions apply only to drugs dispensed by or on a prescription of a veterinarian after examination of the patient and subsequent diagnosis or after some prior examination which has been sufficiently recent to afford an accurate knowledge of the condition of the patient. In those cases where it is necessary to dispense drugs

without examination of the patient, the drug dispensed should bear a complete label which complies with all regulations of the Act.

Likewise, all the provisions of the Act pertain when the labeling of a drug bears such information as will result in the repurchase and continued use of the drug by lay users without direction and supervision of the veterinarian.

Manner in Which This New Act Will Benefit the Veterinarian and Livestock Owner

1. *Curtailement of Indiscriminate Sale and Distribution of Dangerous Drugs.*—

The new Act will tend to curtail the sale and distribution of dangerous drugs by the unqualified and incompetent. It is true that it will take some time before this can be effectively accomplished. However, the Food and Drug Administration has already informally declared that there are a number of drugs which are in fact dangerous if used other than under expert advice and under constant supervision of a physician. A few of the drugs which should be dispensed only by or on the prescription of a physician are those containing significant amounts of such ingredients as: aconite, aspidium, carbon tetrachloride, chenopodium oil, digitalis, santonin, sulfapyridine, tetrachlorethylene, thiocyanates, and thyroid.

2. *Elimination of "Quack Products" and Nostrums.*—The enforcement of this new Act will gradually force "quack products" and nostrums off the market. As this occurs the livestock owner will become increasingly conscious of the value of scientifically sound medicinal agents and their proper use after consultation with and diagnosis by the veterinarian.

3. *Improvement in Quality of Therapeutic Agents.*—Because of certain regulations in the new Act, practically all manufacturers of human and veterinary pharmaceuticals have installed complete control laboratories. In these laboratories the raw ingredients are assayed for purity before compounding, samples of the finished product are analyzed to determine that the cor-

rect amount of active ingredients are present; physical properties such as specific gravity, viscosity, color, etc., are checked; sterility tests are conducted on finished vials and ampules of parenteral solutions, etc. The same care and control is used in the manufacture of a veterinary pharmaceutical as is used in the manufacture of a product for human use. If the percentage and type of ingredients were adaptable to human therapy, these veterinary products would be completely satisfactory for use in human medicine.

Control systems, such as are now being used by the more reputable manufacturers of veterinary pharmaceuticals, can only result in uniformity and improvement of quality in the products which are used every day.

4. *Increase in prestige and professional standing.*—This is the first time an act of this type has specifically set forth those persons who are qualified to prescribe drugs. It is significant that only the physician, dentist, and veterinarian are included, thus setting forth these three branches of medicine as the only ones qualified by scientific training and experience to prescribe all types of drugs in a manner which will insure the safety and well-being of man and animals. This is truly a just tribute to and proper recognition of the important rôle played by the veterinarian.

When the Medical Department of the Army took the Veterinary Corps under its wings during World War I, it abolished such words as splint, ringbone, spavin, quittor, quarter crack,weeny, sitfast, wind puff, etc., etc., in countless array, but 25 years later in civil life all of these terms of the ancient hippiaters live on. Who's to blame?

Among the "Animals that Never Lived" is the whangdoodle, four-legged fusion of lion, cat, dog, horse and rhinoceros, described in the current issue of *The Allied Veterinarian*. This monster flourished (in the popular mind) along the Mississippi about the time of the Civil War. The blood-curdling creature roared like a lion and thrived on flies. Now, you tell one.

Pre-Race Examinations^{*}

J. G. CATLETT, D.V.M.†

Miami, Fla.

PRE-RACE examinations are divided into two operations: identification and physical examination, each having its own purpose. Although in the public mind they are complementary, they are, indeed, independent subjects.

IDENTIFICATION

The horse identification bureau commences operations when an animal arrives at the track. In case of a two-year-old, for example, the bureau is provided with a copy of the certificate of registration which was filed with the Jockey Club when the horse was foaled. The markings shown on the registration blank are closely checked and when the investigator is satisfied with the identity in a general way, a more accurate report, complete with pictures and minute details, is prepared. This report which permits of but little deviation accompanies the horse to the end of his or her racing days, regardless whether he/she has started or not.

Photographic History.—The identification includes a photographic study of the horse in two poses, each designed to accentuate the normal appearance. As a supplement, a complete written description is attached, revealing the markings (legs and head), even to the merest hair tuft. The photographic history is prepared and maintained by the Pinkerton National Detective Agency as a special service for its race-track assignment. Before each race, the picture is compared with the horse in the paddock. The identification bureau, thereby, not only prevents "ringing" but also provides the basis for the pre-race examination. In New York last year, the bureau was able to identify a horse which on

changing hands had been unintentionally misrepresented.

When overnight entries are released, the work of identification is divided among the official veterinarians each of whom is assigned a group of horses to identify and examine. Although it is mandatory that the examining veterinarian be positive of his identifications, the pre-race examination is stressed at this time. He carries a descriptive card for that purpose.

PHYSICAL EXAMINATION

The pre-race examination consists of taking the pulse and heart's action, examining the nasal passages and testing the condition of the legs for soundness in general. The horse is trotted out if there are signs of soreness. A written report, signed by himself and the groom, is prepared in duplicate. One is filed with the identification bureau and the other retained by the groom. Thereafter, the handler is responsible for the horse's condition. Since this examination was started there has been no case of "sponging" or administration of sedatives detected in either New York or Florida.

If the horse's condition is deemed a source of danger to itself or others, as an entry, the decision is reported to the stewards. The stewards may permit such a horse to be warmed up on the way to the paddock and if they and the veterinarian then decide that the horse should not be started, a scratch order is immediately issued. Chronic offenders are placed on the veterinarian's list and they are barred from starting until the stewards believe such entries can be safely accepted.

Last year, three veterinarians examined approximately 11,000 horses in New York and 7,000 in Florida.

"Nerving."—The pre-race examination has opened up the controversial subject of

^{*}Read before the National Association of State Racing Commissioners, Miami, Florida, January 23, 1942.

[†]Chief Veterinarian, of the New York and the Florida State Racing Commissions.

neurectomy. Before writing this article I asked Mr. Herbert Bayard Swope, chairman of the New York Racing Commission, whether my opposition to neurectomy, unpopular as it will be, would embarrass the Commission or commit it to specific action. He advised me to express my views freely and without risk for whatever decision the Commission might make. Secretary Vega of the Florida Racing Commission endorsed Mr. Swope's attitude in so far as Florida is concerned.

I am opposed to certain "nerving" operations in race horses but do not advise legislation barring "nerved" horses from racing, on the ground that such a rule would be impracticable and impossible to enforce. So far as I know, there is no way to determine whether a horse has been "nerved," and until some reliable means of detecting the operation is found, any rule attempting to bar neurectomized horses will fail. While I might be personally convinced that a horse has been "nerved" I would hesitate to venture a positive opinion in the absence of conclusive proof.

Although I believe that plantar (or volar) neurectomy should be prohibited, I do not believe that there is any eventful ill effect from the digital operation (the low operation) since in severing the digital nerve (ramus volaris) there is no danger of a horse throwing its hoof—the innervation of the foot is not completely interrupted. On the other hand, there should be a penalty imposed on persons who permit or order that a horse be submitted to the so called high operation, that is, severance of the volar or plantar nerves above the fetlock. Here, however, is the problem of detection.

Icing.—Barring horses requiring icing before they are fit to race, may or may not be timely. I believe that there are horses running (and winning) that should be permanently retired on account of chronic disability. They are able to race only after standing in a tub of ice for a long time. True, horses are frequently iced for temporary ailments. Rest often corrects conditions which are only aggravated by racing.

I am not certain that a veterinarian is

justified in assuming responsibilities belonging properly to the trainer. But too often, he is called upon to judge and to treat effects due to ignoring his advice in the early stage of the trouble.

Although the problems are not new, neurectomy and icing have been given prominence lately and much remains to be said and done about them in the horse-racing circle. No claim of infallibility is made for any statements I have made.

EDITOR'S COMMENT

Writing on the evil of neurectomy in the Chicago Herald-Examiner, January 27, Sports Editor Edward W. Cochrane discusses the report of the National Convention of Racing Commissions as follows under the headline "Vigilance Grows as First-Class Tracks Ban Undesirables":

Attention is called to the remarks made about the "nerving" evil in racing, which track operators of the higher type have tried to stop for years. They have not been successful because of unscrupulous owners and trainers, although this evil is not practiced to the extent it was a few years ago.

Something will be done this season to rid tracks of "nerved" horses. You may have been at tracks where a horse would break down, one leg—or possibly two, as was the case of a nag on a New York track not so long ago—going out from under the animal. There are legitimate accidents that break horses' legs. There are also illegitimate accidents caused by the practices of "nerving."

"Nerving" is done to send horses to the post when the animals are in no condition to race and would not be able to go to the post without nerve operations. Any trainer or owner who would send out an animal under such conditions should be ruled off tracks for life.

This would be a humane protection to the horses and certainly a protection to the betting public.

Experts Tell of Tragic Effects

This is what Dan Parker, sports editor of the New York Mirror, has to say on the subject:

One good purpose served by the racing commissioners' forum was to focus attention on the 'nerving' evil, defended ardently in the past by 'sportsmen' who race unnerved horses until their hoofs rot or slough off. George P. Mahoney, member of the Maryland Racing Commission, came out with some blunt truths about the various aspects of the nerving operation.

He quoted authorities to show what happens to a horse that has been nerved. Mahoney didn't rely on owners of racing stables who make a specialty of taking brokendown thoroughbreds and prolonging their racing life by having them denerved. He went to ethical veterinarians for his information. This is what he found out:

Dr. Louis A. Merillat: 'Horses submitted to violent exercises, whether racing, fast road work or heavy draft work, are not ideal subjects for neurectomy (medical term for the operation). These horses will not survive the ordeal for any length of time. Often the first day's work will prove their undoing, but more often they break down a few weeks after the operation.'

A Maryland veterinarian who specializes in performing the operation said: 'Whenever I perform a neurectomy operation, I first put my hand on the horse's shoulder, look him straight in the eye and say—Old fellow I am about to give you the last rites of the church.'

Illinois Board Adopts Detector

Commissioner Mahoney called the other commissioners' attention to an instrument capable of diagnosing whether or not a race horse has been nerved. He offered to see that such an instrument is provided free of charge to all racing commissions sincerely interested in putting an end to the barbaric practice of nerving horses.

It will be intensely interesting to see how quickly other states will take advantage of this opportunity to rid the racing business of the unscrupulous gents who have been resorting to these practices for years, but who have been driven from the better tracks.

You often hear a stable owner complain that he cannot get stall space at a certain high class track. He is told there is no room for him. It so happens that good tracks of today can select their owners and stables, and thus keep out undesirables such as the ones resorting to these practices.

Fortunately the Illinois racing commission has accepted the offer of Mahoney to furnish one of the detecting devices, although there has been little trouble in recent years with this practice in Illinois because of the strict rules of the commission.

The commission cannot be too strict. Owners of stables in which unsound horses are kept racing by unnerving bring all sorts of political pressure in an attempt to force their way into tracks where they should not be allowed. Fortunately they seldom are successful.

Coöperation Needed for Crusade

If you will think back, you'll realize that you have seen few horses break down in recent years at the better tracks. In the case of a horse like Sky Larking, which broke a leg as

a 2-year-old a few years ago when he was rated as the best 2-year-old of the year, it was perfectly legitimate. That was an accident. That happens occasionally.

Legitimate veterinarians will not unnerve horses. They know it is unfair to the animals, which must break down soon as a result, and grossly unfair to the betting public, which innocently places wagers on such horses and loses as a result.

It is up to racing commissions to see that the license of veterinarians who will perform such operation are revoked and that owners who will order such operations are ruled off the turf. It is possible to abolish the practice entirely, but it is necessary for commissions, like the one in Illinois, to have the co-operation of all other commissions and all owners of racing stables.

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During the days when the horse was king of urban transportation neurectomy was an every day operation, but gradually it passed into limbo with the coming of the automobile and delivery truck. It was regarded as a useful operation only in the hands of the extremely cautious practitioner who weighed critically the prospect of prolonging the working life of the disabled horse. The hazard was well known and avoided by the selection of suitable cases. In general, the operation was taboo in race horses of every class. The violence of their work breaks down the affected structures which lameness no longer protects.

Resources of the Warring Powers

	Axis	Allies
	%	%
Iron ore	18	82
Coal	29	71
Wheat	21	79
Potatoes	58	42
Sugar	23	77
Petroleum	3	97

The population of the Axis territory (willing and enslaved) is 474,000,000 while the anti-Axis world has 1,300,000,000 free people. The answer to the desperate drives of the Nazis southward and eastward and of the Japs in the Dutch East Indies is petroleum and rubber, both of which are wartime necessities. In the East Indies there is 30 per cent of the world's rubber, 20 per cent of the tin, 8 per cent of the coffee and 97 per cent of the quinine.

The Relationship Between Nutrition and Disease in Farm Animals*

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IT IS NOW A WELL established fact that there is a definite relationship between nutrition and certain diseases of farm animals. Rickets is perhaps the most widely distributed nutritional disease in the various species of farm animals. Whenever any species of animal is kept away from direct sunlight and is not supplied a sufficient amount of vitamin D in the feed, there is always danger of rickets occurring. On the other hand, if animals are running out of doors, it is doubtful if much actual benefit will result from feeding vitamin D under most circumstances.

Rickets, like some of the other deficiency diseases may sometimes be influenced by factors in the feed other than the specific vitamin. For example, the amounts of and the ratio between the quantities of calcium and phosphorus may influence to some extent the occurrence or nonoccurrence of rickets. Likewise, the addition of sulphur to the feed for chickens has been shown to cause rickets under conditions where the disease would not otherwise occur. The more rapidly the animals grow, the more likely they are to develop rickets unless adequately protected.

Bone diseases other than rickets may be greatly influenced by the feed. For a number of years it has been known that an insufficient supply of calcium or lime and phosphorus in the feed results in various degrees of bone defects—particularly soft bones which may break easily. There is also evidence suggesting that other less obvious bone diseases may be the result of deficiencies in the feed. Strangely enough, adding too much mineral to the feed has apparently been partly responsible for the occurrence of some bone diseases, such as

perosis in poultry. Care should be taken, then, not to add needless amounts or improperly balanced minerals to the feed.

Some of the so-called "trace elements," such as cobalt, manganese, iron, copper, and iodine, may play an important part in preventing diseases under conditions where there is a deficiency of these elements. A cobalt deficiency is considered to be the probable cause of a wasting disease in cattle and sheep in some parts of the world. This type of disease is usually called "pica" in this country. In New Zealand and Australia it has been called "bush sickness." In Florida it is known as "salt sick." Manganese is generally regarded as playing a part in preventing the bone disease known as perosis or "slipped tendon" in poultry. Recently evidence has been reported indicating that a deficiency of this element may also cause bone disease in pigs.

Iron and copper, particularly iron, help to prevent some of the anemias that occur in farm animals. The anemia which occurs in young pigs is perhaps the most important nutritional anemia in live stock. In this connection, it should be remembered that the young pig must eat the iron-containing substance directly, since it can not be supplied through the sow's milk.

Goiter and hairlessness in newly born farm animals in some parts of the country is attributed to a deficient supply of iodine.

The question of adding any or all of these "trace elements" to the feed merits careful consideration. There is a possibility that some of these may do harm if used too freely. Perhaps the best plan is to use them only when there is evidence that they are needed.

Some of the milk-fever-like diseases in cattle, and pregnancy disease in sheep appear to be favorably influenced by an

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*Presented at the Purdue Nutrition School, November 6-7, 1941.

abundant supply of easily digested carbohydrates. Consequently there is sometimes a demand for such feed as molasses to be used in acetoneemia in cattle and pregnancy disease in ewes.

There is some suggestive evidence that a deficient supply of certain vitamins may occasionally play a part in causing some of the breeding difficulties in farm animals. However, care should be taken to avoid "overselling" nutritional factors in connection with sterility in live stock. There is still basis for considerable doubt as to how much practical benefit results from the addition of the antisterility vitamin to the ration of farm animals.

Death losses in new born farm animals can safely be attributed partly to improper nutrition of the dam during pregnancy. This kind of loss is perhaps of more importance in pigs than in any other kind of live stock. The death losses among new born pigs is frequently of very great importance. These losses should not all be attributed to any one influence. However, it now appears certain that the nutrition of the sow during the gestation period is of more importance than has been recognized by farmers. The results of investigation made at this Experiment Station indicate the lack of good quality protein in the sow's ration during pregnancy is likely to be followed by a high death rate in the new born pigs. It was found that feeding the sows only grain and mineral during the gestation period was followed by a death loss in the new born pigs four times as high as when meat scrap, tankage or milk was fed.

Such an old and well known disease of the newborn as calf scours is now regarded as being influenced by the nutrition of the dam during pregnancy. The precise deficiency which may play a part in calf scours has not been fully determined, but a lack of vitamin A is thought to be important.

There are a good many other diseased conditions in farm animals which are being ascribed to nutritional deficiencies. Thus far, however, there is not general

agreement as to the importance of nutritional factors in these diseases. Perhaps the feed manufacturer will do well to follow the policy of preparing rations containing as wide a variety of nutrients as is practical in an effort to prevent deficiencies of undetermined nature.

The question, "To what extent may we expect feeding to influence susceptibility to infectious diseases?" is an interesting one. This question may be answered by saying that adequate nutrition apparently gives some protection against certain infections, while it may increase susceptibility to others. For example, an adequate supply of vitamin A apparently affords protection against certain infections of epithelial surfaces such as occur in the eye and in the respiratory and digestive tracts. On the other hand, a high state of nutrition is thought to increase susceptibility to black-leg in cattle. Moreover, evidence is certainly lacking to indicate that such a destructive disease as hog cholera can be favorably influenced by adequate feeding.

Pig Anemia

One of the means of aiding food production is to be on guard against pig anemia which is notoriously prevalent among the early spring litters. Copperas (= iron sulfate) is the standard remedy. As to the method of administration there is the choice between sapping the sow's udder with a solution of this iron salt, 1 lb. to 1 gal. of water or squirting an iron-copper solution into the mouths of the pigs two or three times daily. About 2.5 drams of iron sulfate and 16 grain of copper sulfate to each pint of water is the popular strength for oral administration.

When a farm paper runs a veterinary column based upon the facts of medicine and puts it in the front forms, someone in the organization knows that there wouldn't be many paid up subscriptions if diseases of farm animals were not kept under control.

Vitamin A Content of Animal Feeds Restricted by Federal War Production Board; Suggested Program Outlined*

THE WAR is exerting a very definite influence on the feeding of animals in America. One of the important ingredients employed in the manufacture of animal feed is fish liver oil. The one commonly used by feed manufacturers and animal owners is cod liver oil. Other valuable sources of vitamin A and also D are shark and halibut liver oils, sardine oil and other fish oils.

With the war at sea now involving the whole world, to obtain these oils has become very difficult, in fact almost impossible. The result is a rapidly developing shortage of vitamin A, and rationing of this substance was ordered by the War Production Board February 10, 1942.

Since vitamin D is available from sunshine, irradiated yeast, irradiated oil and animal sterols, it should not be difficult to obtain this ingredient. Vitamin A, however, in addition to being obtained from the fish liver oils is also available in the form of carotene (a yellow substance as found in carrots, alfalfa, liver, etc). From this source, however, it is necessary for the animal's own body to change the carotene into vitamin A before it can be utilized. There is some question regarding the ability of certain species of animals to convert efficiently carotene into vitamin A. Thus it can be understood that the oil shortage affects most seriously those species.

Since our government is in urgent need of every possible ounce of tinplate which can be obtained, it will, therefore, no longer be available to manufacturers of canned animal feeds. Some of these products may subsequently be marketed in glass or other containers. It will be necessary, therefore, in many instances for users of canned animal foods to seek other sources of nourishment for their animals. There will probably be a number of prepared basic products available but it should be kept in mind

that these may likewise be deficient in certain ingredients such as vitamin A and particularly since vitamin A and carotene gradually disappear in such products when stored for any length of time. We, therefore, advise that the animal-owning public conserve every possible source of vitamin A and employ them to supplement their animal feed.

The following contain either sources of vitamin A or carotene and are, therefore, at this time exceedingly valuable for supplemental purposes: medicinal cod liver oils, tablets labelled to contain vitamin A, other oils such as halibut, tuna and shark liver oil, are rich sources of the vitamin. Dairy products such as milk, cheese, butter and eggs, some fish products, especially salmon and sardines, animal livers, particularly beef, veal, hog, lamb or poultry, are good vitamin A carriers. Green or yellow vegetables, raw or cooked, such as carrots, snap beans, peas, spinach, lima beans, yellow corn, and the dark leafy types, especially spinach, alfalfa leaf, etc., are particularly valuable for their carotene content. Do not discard bits of butter or cream but save them for animals. Also save carrot parings, scrapings and the tops of green leafy vegetables as these can be ground fine, cooked and when added in proper quantities to the daily feeding of animals such as dogs and cats, will help to supply carotene, which may either be low or completely lacking in many feeds. Vegetable matter contains considerable undigestible fiber, consequently such foods should be ground fine, cooked until reduced to a pulpy mass and then fed in limited quantities, otherwise bowel disturbances may be expected in carnivorous animals.

Should your animals become ill on the diet customarily known to be satisfactory the difficulty may be due to a vitamin A deficiency. In such an instance we suggest that you consult a veterinarian to obtain an accurate diagnosis. Tell him exactly what

*Joint Committee on Foods, American Veterinary Medical and Animal Hospital Associations and issued by The American Humane Association, Albany, N. Y.

you have been feeding in order that he may intelligently assist you. Common effects of vitamin A deficiency are: night blindness (xerophthalmia), sore eyes, growth failure, a lowered resistance of all mucous membranes, stones may form in the urinary bladder, nose, throat and skin infections may develop and a general unthrifty condition manifest itself.

"An ounce of prevention is better than a pound of cure." Be on your guard—see that your animals are protected by properly supplementing deficient diets before symptoms appear. Don't be wasteful, save every food ingredient containing vitamin A or carotene and in this way help keep all animals in a healthy, thrifty condition as many will be needed to win the war.

Dogs in National Defense*

Just where do our dogs fit into the national scheme of defense? This is a natural question, but easy to answer.

Aside from their invaluable aid in keeping up public morale, dogs fill a very material need in today's scheme of all-out defense.

IN THE HOME

In the home the dog's usefulness has never been of more importance. Most of our homes are a bit disrupted—many of our men are in service, all able-bodied adults are busy with various war works; and oftentimes children, the old, the sick, and the weak find themselves alone and unprotected. In such instance the presence of a dog spells comfort and safety. His guarding instinct is something which can be depended upon. His quickness to hear the approach of a stranger and his uncanny ability to detect fire or smoke long before a human can do so are well-recognized canine traits.

IN INDUSTRY AND WAR

In industry the dog is rapidly proving that he is a super-watchman—one whose ears and nose are keener than any human's.

In a strict military sense, dogs proved

their worth in the first World War. They were used extensively by most of the countries of continental Europe and are being used in even greater numbers in the present war, by Germany and many other countries. They are usually used to serve one of four purposes or a combination of these:

(1) As guards, and their value along this line in an encampment, around an air-drome, as a patrol around bridges, along railroad tracks, and at other vital points, cannot be overestimated. (2) As sled dogs over terrain where the usual conveyance cannot travel. Here they are invaluable in transporting vital necessities—medicines, foods, etc. (3) As messengers. The dogs carry messages from a base to an outlying line and their quiet fleetness of foot and their ability to get through even the densest of barbed wire makes them far superior to human messengers. (4) As "spotters" for wounded men in the field. In this work they are attached to an ambulance corps, and many a soldier would be left behind to die of exposure and starvation if it were not for the dogs.

IN AMERICA

We in America are happy over the fact that dogs do mean so much in the scheme of national defense. We all have dogs in our homes, and more and more we are acquiring them as guards for our great factories and plants. Their use in a strict military way is relatively new to this country, but already there are training clubs in existence which are preparing dogs for real military service. We hope our dogs may never need to see a battle front, but it is comforting to know that they can be depended upon to render us extremely valuable service, along the lines of their military training, in civilian defense.

A. R.

The Waste of Food Order of Britain, prohibiting the feeding of dogs with food suitable for human use, applies equally to food for sick dogs prescribed by veterinarians, the Ministry of Food has ruled.—*From The Veterinary Record, July 26, 1941.*

*Editorial, Dog News, xx (Feb. 1942), p. 3. [Headlines ours.]

Treatment of Swine Erysipelas in Turkeys with Serum from a Turkey Infected with *Erysipelothrix Rhusiopathiae**

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IN 1936, Beaudette and Hudson¹ reported on the incidence of swine erysipelas of turkeys in the United States. Since that time, the disease has been reported from the western states by Madsen² of Utah, Hoffman and Hinshaw³ of California, and Rosenwald and Dickinson⁴ of Oregon. In western Washington, five outbreaks of swine erysipelas in turkeys have been diagnosed during the past three years. The morbidity, symptoms, lesions, and mortality correspond closely to those observed by Rosenwald and Dickinson⁵ in outbreaks in Oregon. Additional symptoms observed in the local outbreaks have been a thin, white to yellowish diarrhea with considerable mucus, and an excess of mucus in the mouth.

HISTORY OF RECENT OUTBREAK

The most recent appearance made by *Erysipelothrix rhusiopathiae* in this region, occurred during the first part of October, 1941, in a flock of 5-month-old turkeys. This is the third successive year that the owner of this flock suffered losses from swine erysipelas. The disease was first diagnosed on this farm in February, 1939, in a flock of year-old turkeys. The following year, erysipelas broke out during the last part of November in a group of birds 6½ months old. Each outbreak occurred on a different range. This year's turkeys are now on a range that has never been used before and is a mile from the home farm.

*From the Department of Veterinary Science, Western Washington Experiment Station.

¹Beaudette, F. R., and Hudson, C. B. An outbreak of acute swine erysipelas infection in turkeys. J.A.V.M.A., lxxxviii (April 1936), pp. 475-488.

²Madsen, D. E. An erysipelas outbreak in turkeys. J.A.V.M.A., xci (Aug. 1937), pp. 206-208.

³Hoffman, H. A., and Hinshaw, W. R. Erysipelas in turkeys. Poultry Sci., xviii (1938), p. 443.

⁴Rosenwald, A. S., and Dickinson, E. M. A report of swine erysipelas in turkeys. Cornell Vet., xxix (1939), pp. 61-67.

The birds were on this range one month before erysipelas made its appearance. There is no record of any part of this range having been used for sheep or hogs. However, as poults, the turkeys were ranged on land next to a hog ranch. Inquiry did not reveal any history of erysipelas in the hogs. During this three-year period, each year's turkeys have been hatched by the owner from eggs produced by his own stock.

On October 1, this owner brought two dead turkeys to this laboratory after having lost six others. The dead birds showed typical erysipelas lesions and smears of the heart blood revealed the presence of clumps of small gram-positive rods. Cultures made from the heart blood and livers proved to be positive for *E. rhusiopathiae*.

MATERIALS AND METHODS

On October 2, a moribund bird was brought to the laboratory by the owner. This bird was exsanguinated aseptically. The serum was collected and stored in the refrigerator. Four days later, enough formalin was added to make a 0.5 per cent concentration in the serum. By the time the formalin was added, the serum had become turbid. Microscopic examination revealed large numbers of *E. rhusiopathiae*. An uncontaminated growth of the organism was obtained by culturing the serum. Forty-eight hours after adding the formalin, attempts to demonstrate viable organisms in the serum were unsuccessful.

On October 9, ten apparently healthy birds in the affected flock were chosen at random. Five of these were each inoculated with 2 cc. of the formalized serum and the other five with 3 cc. each. The inoculations were made in the pectoral muscles. On the same date two isolated birds showing symptoms of the disease were each inoculated with 3.5 cc. of the serum. On October

16, a group of ten sick turkeys was inoculated with the serum, using 3 cc. for each bird. Before the birds in this group were inoculated, blood was drawn aseptically from six of them and used to inoculate agar slants. Three of the six cultures showed positive growth of *E. rhusiopathiae* after incubation. On October 18, four of this group were started on a course of sulfanilamide. A total of 30 grains was given each the inoculation of the viable *E. rhusio-*

pathiae suspension. This bird showed typical symptoms of erysipelas and cultures from the liver and heart blood were positive for the organism.

DISCUSSION

The work of Rosenwald and Dickinson⁵ has indicated that commercial anti-swine-erysipelas serum has no practical value as a treatment or preventive. Beaudette and Hudson¹ found that serum of turkeys re-

TABLE 1. Results in the Field from the Use of Serum (Formolized) from a Moribund Turkey naturally Infected with Swine Erysipelas

DATE	NUMBER INOCULATED	AMOUNT OF SERUM PER BIRD	CLINICAL APPEARANCE WHEN INOCULATED	OTHER TREATMENT	RESULT
Oct. 9	5	2.0 cc.	Healthy	None	Unchanged
Oct. 9	5	3.0 cc.	Healthy	None	One died of erysipelas Oct. 12; others unchanged
Oct. 9	2	3.5 cc.	Erysipelas symptoms	None	Recovered
Oct. 16	4	3.0 cc.	Erysipelas symptoms	30 grains each of sulfanilamide Oct. 18	Two dead Oct. 19; others recovered
Oct. 16	6	3.0 cc.	Erysipelas symptoms	None	All recovered

bird on that date (10 grains three times a day). The dosage was based on 15 grains per each 10 pounds of body weight.

On October 10, one of two healthy turkeys at the laboratory was inoculated with 3 cc. of the serum and the other was held as a control. On October 18, the growth of *E. rhusiopathiae* on four agar slants was suspended in 1.5 cc. of physiological salt solution. Of this suspension 0.75 cc. was inoculated into both birds, part intramuscularly and part subcutaneously.

RESULTS

The results of using formolized turkey serum containing dead *E. rhusiopathiae* organisms in the field are shown in table 1.

The turkey inoculated with the serum in the laboratory withstood the subsequent inoculation of the living *E. rhusiopathiae* with no apparent ill effects. The control bird succumbed on the fifth day following covered from the spontaneous disease

seemed to give greater protection against the turkey strain than serum from chickens that resisted artificial infection. In our investigation, the anti-erysipelas serum used was of turkey origin. It was different from ordinary serums in that it was obtained from a turkey sick with erysipelas and contained numerous *E. rhusiopathiae* organisms. On account of the small number of turkeys used in this experiment, it is not advisable to draw definite conclusions. However, there is an indication that an anti-erysipelas serum of turkey origin might be of more value than one of swine origin.

Further investigation is necessary to determine whether the value of the material used lies in the killed organism, the serum, or combination of the two.

The use of large doses of sulfanilamide was of no value when used with the serum.

⁵Rosenwald, A. S., and Dickinson, E. M. Swine erysipelas in turkeys. A.J.V.R., No. 3 (1941), pp. 202-213.

The Incidence of Parasitic Infection in Domestic Animals*

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DURING THE YEAR 1940-1941, records were kept to determine the incidence of parasitic infection in various species of animals received at the veterinary clinic, The Ohio State University. The incidence of infection is based on fecal, skin and blood examinations and not on the finding of adult parasites. The findings reported here are from dogs, cats, and horses. Other species of animals were examined, such as cattle, hogs, sheep, goats, birds, and zoo animals but the number of examinations from these animals was small. Since dogs and cats are received from both the country and city, this would seem to be a fair representation of parasitism in dogs and cats presented to any small animal hospital. Feces, blood, and skin scrapings from 1,832 animals were examined during the above period.

TECHNIQUE OF FECAL EXAMINATION

Fresh fecal material was collected and placed in paraffined paper cups. This material was mixed with saturated sodium nitrate solution, approximately one part feces to five parts of the solution. This homogenous suspension was then strained through cheese cloth into a sterile beaker.

The strained material was poured into a flat-bottom vial (capacity 21 cc.) until the mixture formed a small convex meniscus above the edge of the vial. A clean slide was placed on the vial so that the fluid adhered to its under surface. After ten minutes, the slide was removed, inverted and examined under the microscope.

TECHNIQUE OF BLOOD EXAMINATION

Blood samples (about 10 cc.) were collected in sterile glass vials. These vials were sloped and allowed to stand three to

four hours, or over night, so that the serum would separate from the clot. Drops of serum were removed with a medicine dropper, placed on a slide, covered with a coverslip, and examined under the microscope. If no microfilaria were found, the remainder of the serum was placed in a centrifuge tube, a small amount of distilled water added, and centrifuged for three minutes. The contents at the bottom of the tube were removed with a capillary pipette, placed on a slide and examined under the microscope. Four slides were examined directly from the serum and a like number from the centrifuged serum before the sample was declared negative.

TECHNIQUE OF SKIN EXAMINATION

Skin scrapings were received in sterilized glass vials. The material was placed on a slide and thoroughly mixed with a drop or two of 10 per cent potassium hydroxide. The slide was allowed to stand several minutes, a cover slip placed on the material which was then examined under the microscope.

RESULTS

Although this report gives only a record from 1,832 animals (table I), consisting of 1,652 dogs, 84 horses, and 96 cats, there were numerous other species of animals examined, such as cattle, hogs, sheep, goats, birds, and zoo animals. These latter species were too few in number to include in this report.

In fecal samples from 1,486 dogs, 802 (53.97%) were positive for parasites (table I). *Trichuris vulpis*, found in 380 samples (25.57%) was the most common; *ancylostoma caninum* was next in number with 256 (17.22%); *Toxocara canis* was third in number with 239 (16.09%). If *Toxocara canis* and *Toxacaris leonina* (78 or 5.25%) were combined, the ascarids would place second in number. *Dipylidium caninum* and *Taenia pisiformis*, which show a low per-

*From the Department of Veterinary Parasitology and Veterinary Clinics, The Ohio State University.

centage (table II), are much more commonly found but these reports are based on the presence of ova found in feces, and not on the presence of proglottids. *Dipyllobothrium latum* was diagnosed in two instances by fecal examination and the parasites removed with the use of vermifuges.

Three of 62 dogs (4.84%) examined for skin parasites were found to be affected with *Sarcoptes scabiei* and nine (14.57%) with *Demodex canis*.

One hundred and four dogs were examined for the presence of *Dirofilaria immitis* and twenty-one (20.19%) were found positive.

Eighty-three fecal samples from cats showed thirty-seven (44.57%) positive for some type of intestinal parasite, (table I). The most prevalent were ascarids (*Toxocara mystax* and *Toxascaris leonina*) show-

TABLE III—Percentage of Parasitized Animals Harboring One or More Species of Parasites

No. OF SPECIES	DOGS	%	CATS	%	HORSES	%
One	563	67.42	33	82.50	52	63.41
Two	205	24.55	6	15.00	29	35.37
Three	52	6.23	.....	.....	1	1.22
Four	12	1.44	1	2.50	.....	.....
Five	2	0.24	.....	.....	.....	.....
Six	1	0.12	.....	.....	.....	.....

ing a percentage (table II) of 37.35. Other species found were *Ancylostoma caninum*, 6.02 per cent; *Coccidia*, 6.02 per cent; *Taenia taeniaeformis*, 1.2 per cent; and, *Trichuris campanula*, 2.41 per cent. Skin

TABLE II. Species and Percentages of Parasites as Found by Laboratory Tests

SPECIES OF PARASITES	DOGS			CATS			HORSES		
	No. EX-AMINED	No. POSITIVE	PER CENT POSITIVE	No. EX-AMINED	No. POSITIVE	PER CENT POSITIVE	No. EX-AMINED	No. POSITIVE	PER CENT POSITIVE
<i>Ancylostoma caninum</i>	1486	256	17.22	83	5	6.02	—	—	—
<i>Toxascaris leonina</i>	1486	78	5.25	83	6	7.23	—	—	—
<i>Toxocara canis</i>	1486	239	16.09	83	—	—	—	—	—
<i>Toxocara mystax</i>	—	—	—	83	25	30.12	—	—	—
<i>Dipylidium caninum</i>	1486	65	4.38	—	—	—	—	—	—
<i>Taenia pisiformis</i>	1486	40	2.69	—	—	—	—	—	—
<i>Trichuris vulpis</i>	1486	380	25.57	—	—	—	—	—	—
<i>Coccidia</i> (all species)	1486	79	5.32	83	5	6.02	—	—	—
<i>Dipyllobothrium latum</i>	1486	2	0.13	—	—	—	—	—	—
<i>Sarcoptes scabiei</i>	62	3	4.84	13	3	23.08	—	—	—
<i>Demodex canis</i>	62	9	14.51	—	—	—	—	—	—
<i>Dirofilaria immitis</i>	104	21	20.19	—	—	—	—	—	—
<i>Trichuris campanula</i>	—	—	—	83	2	2.41	—	—	—
<i>Taenia taeniaeformis</i>	—	—	—	83	1	1.20	—	—	—
<i>Strongyles</i>	—	—	—	—	—	—	84	82	97.62
<i>Ascaris equorum</i>	—	—	—	—	—	—	84	28	33.33
<i>Anoplocephala magna</i>	—	—	—	—	—	—	84	2	2.38

TABLE I. Incidence of Parasitism Indicated by Blood, Fecal, and Skin Examinations

TYPE OF EXAMINATIONS	NO. EXAMINED	POSITIVE	NEGATIVE	POSITIVE %
Fecal (Dog)	1486	802	684	53.97
Blood (Dog)	104	21	83	20.19
Skin (Dog)	62	12	50	19.35
Fecal (Cat)	83	37	46	44.57
Skin (Cat)	13	3	10	23.08
Fecal (Horse)	84	82	2	97.62

scrapings from 13 cats were examined and three (23.08%) were found positive for *Sarcoptes scabiei*.

Horses showed the highest incidence of parasite infection, 82 of the 84 animals examined being positive for parasites (table I). The ova of strongyles were found in 97.62 per cent of the animals examined (table II). *Ascaris equorum* ova were found in twenty-eight (33.33%) of the fecal samples, and ova of *Anoplocephala magna* were found in two samples.

Table III shows the percentage of parasitized animals harboring one or more species of parasites. The greater number of parasitized dogs (563 or 67.42%) showed the presence of only one species of parasite; two hundred five (24.55%) harbored two species; and, 52 (6.23%) showed the presence of three species. Two animals were found with five species, including *Dirofilaria immitis*, *Trichuris vulpis*, *Ancylostoma caninum*, *Isospora felis*, and *Toxocara canis* in one dog, while the other harbored *Dirofilaria immitis*, *Toxocara canis*, *Ancylostoma caninum*, *Trichuris vulpis*, and *Toxascaris leonina*. One animal harbored six species of parasites, including *Ancylostoma caninum*, *Trichuris vulpis*, *Toxascaris leonina*, *Isospora felis*, *Toxocara canis*, and *Dipylidium caninum*.

Newsgrams

The war is cutting deeply into every one's way of life and is apt to cut deeper in coming months, perhaps years.

* * * * *

The strength of the Army is about to be increased to more than 3,600,000; about 1,900,000 selectees will be added during the next few months.

* * * * *

By the end of 1942, 7,000,000 Americans will have been registered for military service; of these, about 900,000 will be from the 20- to the 21-year-old group; about 300,000 from the 29- to 35-year-olds, and about 700,000 from the main source—men from 21 to 28 years old.

* * * * *

Class 1A, or those between 21 and 28, will include married men whose wives are working and perhaps those whose wives are able to work. The recently married go in class 1A, along with the bachelors.

* * * * *

The Army and Navy will have 5,000,000 under arms by January, 1943, and probably 10,000,000 by the end of that year. The latter figure is said to be the maximum strain our man power will bear.

* * * * *

The population of the allied nations, not computing China, is 375,000,000, and that of the Nazi group around 175,000,000, granted that the alliances remain *in statu quo*.

Keep the Soldiers Shod

In no way does the need of speeding up animal production show up more conspicuously than in the shoe leather worn out by soldiers. In heavy training and marching, a pair of soles wears out in ten days. The straw shoes and bare feet of continental Europe are the result of animal shortage. One of the jobs of the veterinary service is to keep the soldiers shod. Food, textiles and leather is a trio of war necessities as well as arms and ammunition.

CLINICAL DATA

A good laying hen drinks about 18 gallons of water in a year and she needs it because eggs are two-thirds water.

The insecticide properties of pyrethrum extract in kerosene as a spray can be improved by the addition of sesamin, derivative of sesame oil.—*USDA*.

Diabetes insipidus of the horse is an occasional, though quite rare, disease. Its nature is unknown and there is no cure. Pituitary extract (posterior) checks the profuse diuresis and intense thirst for a few days only.

The greatest danger of contracting brucellosis in veterinary practice is through obstetrical work in sows. The wearing of gloves and disinfecting the hands are the preventives.—*From the American Foundation of Animal Health*.

Experimental pneumonia in mice was produced with virus obtained from human influenza patients by Dr. Clara Nigg, of the Influenza Research Laboratory, of the Minnesota Department of Health. The result is said to be a clue for solving the pneumonia problem.—*From Science, January 9, 1942*.

Under the outdoor conditions of Beltsville, Md., eggs of *Macracanthorhynchus hirudinaceus* (= thorny-headed worm) remained viable in soil for three and a half years, according to a report by Associate Zoölogist Kenneth C. Kates of the U. S. Bureau of Animal Industry published in the *Journal of Agricultural Research*, January 15, 1942.

Ovulation in the bitch occurs about the fifth day following the acceptance of copulation.—*L. F. Whitney in Veterinary Medicine*.

The peritoneum of rabbits is the tissue of choice to graft into the palpebral conjunctiva scarred by injury (lime burns, etc.)—*From Archives of Ophthalmia, Nov., 1941*.

More horses die of digestive disturbances than from all other causes combined. Chloral is the best sedative and mineral oil with carminatives the best cathartic.—*C. C. Frank, chief veterinarian of Iowa, before the state association of South Dakota*.

In the treatment of the dry cutaneous gangrene of the neck and withers, erroneously called sitfast, pack the area with salicylic acid until the sequestrum has completely detached itself. Sequestrectomy should not be performed earlier.—*The Norden News*.

Riboflavin-deficient diets of dogs produced nervous troubles and profound collapse with demyelination of the cord and peripheral nerves. The trouble was prevented, and if present, cured by the administration of crystalline riboflavin.—*Sweet, Cowgill and Zimmerman, Abst. E. S. R., Feb. 1942, p. 230*.

There was no yellow fever of the urban type reported in Brazil during 1941, nor in the previous three years. Credit is given to the perfected methods which began in this hemisphere by Gorgas of the United States Army and Oswaldo Cruz of the Brazilian institute bearing his name.—*Rio de Janeiro correspondent to the Journal of the American Medical Association, Jan. 10, 1942*.

Buy Defense Bonds and Stamps

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Sulfanilamide Crystals in the Peritoneal Cavity

Although sulfanilamide is quickly absorbed by the peritoneum and there is no certainty that it exerts any local germicide action, its value in overcoming peritonitis and operative contamination is not questioned. The peritoneum is perhaps the fastest method of administration to achieve effective concentration in the blood. Doses greater than 5 Gm. are avoided because of a rather high incidence of hepatitis following its implantation in the peritoneal cavity. The implantation does not, however, injure the peritoneal surfaces and it is suggested as a means of preventing adhesions due to infection. Although primarily believed to be effective only against hemolytic streptococci, other peritoneal infections (*B. coli*, *B. welchii*, et al.) yield equally well to its action. Compound fractures, burns, chronic ulcers, infected wounds, mastoid cavities, osteomyelitis are favorably influenced when smothered with sulfanilamide crystals.—[Jackson, H. C., and Collier, F. A.; *The Use of Sulfanilamide in the Peritoneum*; J.A.M.A., cxvii (Jan. 17, 1917), pp. 194-200.]

Feeding Corn Cockle to Chickens

Corn cockle is a toxic, hemolytic, glucoside of maize known as saponin, agrostemmin, sapotoxin and smilacin and is contained in all parts of the plant but mainly in the grain. Young animals are the most susceptible to its toxic action, but they acquire a tolerance as they grow older. The poison is destroyed by heating at 50 C. The toxic dose is variable. For calves and fowls: 0.25 lb. per 100 lb. of body weight and for pigs and dogs, 0.10 and 0.09 per lb. (Corney, 1874), for chickens of 4 to 6 months, Schneider established the toxic dose as 0.005 to 0.01 Gm. daily (= 0.075 to 0.15 grains) daily.

The symptoms are unthrifty, unkempt appearance, staggering gait, and accelerated respiration. The autopsy reveals a yellow, cheesy, caseous crop and mouth, pericardium and heart with congested



—From Poultry Science

General unkempt appearance of chickens due to cockle poisoning.

areas, and some congestion of the lungs and trachea.

The difference in the toxic dose between ground cockle and whole cockle was pronounced in this experimental study. For example, in chickens 6 to 10 weeks old, a ration containing 0.3 per cent of ground cockle was toxic and one containing 10 per cent in that form (= 0.8 of body weight) was lethal. On the other hand, both adult and young chickens tolerated 3.5 per cent of unground cockle and older birds 5.9 per cent in their ration without apparent ill effects. (Heuser, G. F., and Schumacher. *The Feeding of Corn Cockle to Chickens*, *Poultry Science*, XXI (Jan. 1942), pp. 86-92.)

Warns Against the Use of Lethane in Animals

Commenting upon the use of Lethane—a kerosene product—recommended by Dr. MacHaffie, School Medical Officer of Ottawa, Ontario (*Vide*, the Journal, Feb., 1942, page 163), Peter S. Roy of the Atlantic Boulevard Veterinary Hospital, Jacksonville, Fla., writes:—

In the February issue you mention the use of Lethane in deodorized kerosene—Don't use it on animals. A white Spitz, spayed after the use of Lethane, went into convulsions, paralysis and howling when touched, probably due to sensitivity of the skin. Morphine, a light daubing of peanut oil, brought her out

of the distress but the paralysis remained for three days.

Eight goats started to wobble all over the place 15 minutes after the use of this drug, one aborted and some of them couldn't get up. Coffee internally and linseed locally brought them out. One of them, affected with coccidiosis, died.

The drug, used experimentally on a black mongrel, caused paralysis in 25 minutes with pain when touched in 30 minutes. The symptoms were similar to those of furious rabies. Lethane mixed with water caused paralysis also and with deodorized kerosene there was pain on palpation of the skin. *Post mortem* there were no macroscopic changes. In cats it caused painful death.

[This report indicates that animals are sensitive to the use of a drug that is recommended without reservation for use in human medicine.]

Blanket Sick Cows

"To beat our enemies in this war blanket every sick cow," is a suggestion for the food-for-freedom program made by Chas. Haasjes, Shelby, Mich., to practitioners who wantonly overlook the need of warm clothing for ailing cows on the ground that cow stables are generally warm and cows do not shiver from cold like other animals. At a meeting of physicians, the writer goes on to say, a speaker told his audience that much ado is made over diagnosis while too little is done toward "laying on hands" like the chiropractor who somehow manages to stay in business.

The truth is that practitioners seldom put blankets on cattle suffering from shipping fever, calf scours and many other ailments in cold and chilly weather, notwithstanding that warmth of body is a therapeutic measure *par excellence* without exception. It is a simple matter, says the writer, to fashion a good blanket from grain bags and binder twine which are always at hand on every farm. Collecting paper-lined grain sacks in summer to have on hand for clothing calves affected with scours in wintertime is recommended as a sound practice. I am convinced, he continues, that American veterinarians do not blanket sick cattle because that part of

their treatment is never mentioned in case reports.

A New Compound Vaccine

Typhoparatyphoid - diphtheric - tetanus vaccine given in three doses of 1, 2 and 2 cc. at intervals of 15 days is used in occupied France for vaccinating against the diseases indicated. The use of this quaternary product and its formula was described before the *Académie de Médecine* by Professor Ramon, scientific director of the Pasteur Institute of Paris, alumnus of Alfort, and sponsor of tetanus toxoid and of multiple vaccines.

The compound causes less severe reactions and fewer severe ones than the same vaccines used separately and though it contains fewer germs per dose, the immunity is solid. The formula is 0.7 billion typhoid bacilli, 0.3 billion paratyphoid A, 0.5 billion paratyphoid B and 13 to 14 units each of the two toxoids (=anatoxins). Thousands of school children and young people have been inoculated with the new product without harmful sequels. The immunity conferred as determined by serological tests is the same as from the former method.

The absence of cross-interference is significant in veterinary medicine where the mixing of vaccine germs is a common practice.

During the years 1932-1940, 64 cases of tuberculosis in horses were examined at the Hanover clinic. The disease was diagnosed in 1.5 per cent of all horses examined. The age range was 5 to 8 years and it was more common in draft horses than in the lighter breeds.—*From The Veterinary Record.*

Although coccidiosis occurs sporadically in cattle, sheep and dogs, there is no reason to believe that these animals are reservoirs of the organism. Such is the conclusion of Senior Mycologist Emmons of the U. S. Public Health Service from a study of coccidioides from soil and rodents. Small rodents appear to be a natural reservoir.

Internal Worm Parasites of Cattle in Northern Indiana*

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THIS PAPER is intended to stress the importance and increasing prevalence of certain worm parasites in cattle, as shown by personal observations made in a rural practice.

It is generally known that gastric strongylosis occurs almost everywhere in the world where ruminants are raised. In northern Indiana, it occurs in both dairy and beef cattle. Apparently, there are many species of Strongylidae in this region. Among the more common parasites of the region identified by G. Dikmans, Bureau of Animal Industry, United States Department of Agriculture are:—the *Strongylus osterlagi*, the *Oesophagostomum radiatum* (nodular worm), the *Trichuris*, sp. (whipworm), and the *Setaria labiato-papillosa*. Of the four named, the first two are the most serious.

I have found that whipworms are troublesome in dogs, and that in cattle the heavy infections are generally associated with other species of worms. It is my belief that whipworms contribute materially to general unthriftiness; and I can not from personal observation regard stomach worms in the peritoneal cavity as harmless.

These parasitisms occur in young cattle after they have run on permanent pastures. Mature cattle are, however, not immune. Losses from ill health and death occur among them.

Under favorable conditions of moisture and temperature, ova voided in the feces develop into embryos which live from the excreta with which they are expelled. The embryos grow to the length of about one micromillimeter and when consumed by cattle they mature in the intestinal tract in two to three weeks. Over-stocking pastures, manure of infected animals, contaminated pounds and swamps, favor infection. The

resistance of the larvae to external influences is great. Ransom pointed out that they resist desiccation for 35 days and also the cold of winter. In pasture land, they remain viable seven to eight months.

Clinical symptoms usually appear in the late summer and fall when they take the form of general unthriftiness, loss of flesh, blanched mucous membranes and often diarrhea. Diarrhea which is particularly common in animals harboring *S. osterlagi* may be fatal in one to three weeks if profuse.

A positive diagnosis can be made only by microscopic examination of the feces after having excluded such diseases as tuberculosis, Johne's disease, coccidiosis, acetoneemia, and foreign bodies. While the flotation solutions commonly employed in detecting the presence of worm ova in fecal material are useful, the busy practitioner will find the simple smear method quite satisfactory. Moreover, a positive diagnosis can be made *post mortem*, if the autopsy is made soon after death. Later, no worms can be found. At any rate, this was my experience in one instance where it was necessary to confirm the diagnosis by making a fecal examination.

In regard to treatment, anthelmintics are but an adjunct. The more important factors are proper nutrition, sanitation and management. These play an important part in the control of these parasitisms in cattle. It is essential that infected herds receive a ration complete in every respect, including vitamins and minerals. Roughage should be fed in racks and the concentrate in troughs elevated above the floor. In addition to these measures, such anthelmintics as nicotine sulfate, copper sulfate, kamala, tetrachlorethylene and phenothiazine are useful.

A few case reports, briefly told, will tend to illustrate my theme.

*Read before the Section on General Practice, AVMA, Indianapolis, Ind., Aug. 13, 1941.

Case No. 1.—This was a herd of 50 breeding Herefords and their yearling offspring, examined March 15, 1937. The whole herd had become unthrifty in spite of a good supply of roughage and some grain. The symptoms were emaciation, weakness, diarrhea and anemic mucous membranes. Two of the adults were moribund; one of them unable to rise. In confirming the diagnosis, one of the badly affected calves, sacrificed for an autopsy, revealed the mucous membrane of the abomasum and small intestine literally carpeted with parasites.

The treatment given was a complete ration, a vitamin-mineral supplement, and a kamala-nicotine anthelmintic. The two moribund adults died but the rest of the herd, responding to the improved care and medication gradually gained weight and recovered.

Case No. 2.—The patients were three 2-year-old Holstein-Friesian heifers in advanced pregnancy and four nonpregnant ones. They had been eating well and the feed was fairly good, but one of them was unable to rise and showed marked anemia and emaciation. The fetus was alive. Fecal examination revealed a multitude of parasite ova. The heifers were put on full feed and given an anthelmintic composed of arsenic, copper sulfate, tobacco, senna, betanaphthol, sodium chloride and Epsom salt. The pregnant animals died. The heavy parasite burden and pregnancy were more than they could bear. The four nonpregnant heifers recovered.

Case No. 3.—Eleven senior yearling steers were segregated from a herd of 125 on account of emaciation, loss of flesh, and diarrhea. Their appetite was fair. One of them was unable to rise. These steers had been placed on a separate pasture and were being fed good clover and timothy hay and grain. The fecal examination revealed ova of *O. ostertagi*. The improved ration already fed being approved, each of these steers was given five, 1-oz. doses of phenothiazine. The animal that was down died the next day but the remaining ten, some of which were very low, quickly responded to the phenothiazine treatment and regained flesh and a thrifty appearance.

Case No. 4.—While testing a herd of Herefords and their spring calves last November, 55 of the calves were found to be small for their age, thin and unthrifty. Most of them were scouring. The fecal examinations revealed numerous parasite ova. But for improving the ration and giving an anthelmintic of kamala and nicotine sulfate, there was difficulty in obtaining the owner's cooperation. The roughage was fed from the ground and the manure was piled up to the level of the feed-box floor. Under these conditions there was

constant recontamination and, of course, no improvement. The owner did not want to go to the expense of building the chute needed for individual dosing with phenothiazine. So, during last winter, seven of the calves died. The autopsy revealed exceptionally heavy nodular and whipworm infection and also the common stomach worm and *Ostertagia*. These calves were sold about the middle of March, 1941. On last April 28, when called to vaccinate 48 calves for blackleg on another farm, I found 48 of these wormy Herefords with their new owner. Although they showed some improvement under better care, about half of them were still thin, scouring and weak, and permanently stunted. When purchased by the new owner, the average weight was 224 pounds and I doubt if any of them had gained any weight. In fact, many of them did not weigh over 150 pounds and they were now about a year old, and therefore not likely to be profitable to any owner.

SUMMARY

These case reports, selected at random from a practitioner's diary, are intended solely to show that worm parasites of large ruminants constitute a major problem of rural practice, for, obviously, between the inapparent cases which attract no attention and the grave clinical ones such as I have described, there must be intermediate degrees of similar infections which should be detected by resorting to classical diagnostic methods. I have attempted to emphasize that in handling worm parasite infections, proper hygienic measures are paramount. My observations also appear to confirm the usefulness of phenothiazine in practice among dairy and beef cattle.

Through a survey sponsored by the National Research Foundation for Eugenic Alleviation of Sterility, Inc. (*J.A.M.A.*, June 21, 1941), information was obtained on 9,489 women who achieved pregnancy from artificial insemination. The number of inseminations required ranged from 3 to 21. In 4,312 of them, twelve operations were required to bring about conception. Three conceived from one insemination. The number of babies born to the group was 9,238.

Mastitis in Dairy Cattle*

Mastitis is an inflammation of the udder which may reduce milk flow 20 per cent and may ultimately destroy the functional tissue of the udder. The noninfectious type (2 per cent) is due to injury or bruises. The infectious type (98 per cent), due to bacteria, may be either acute or chronic. Approximately 2 per cent of the infectious mastitis cases assume an acute or rapid and sometimes fatal course. The chronic type (98 per cent) is widespread and often so mild in the early stages that the disease is not recognized by the owner. This form may also be accompanied by acute "flare-ups."

PREVALENCE

Mastitis of the slow or chronic type is probably present in three-fourths of the dairy herds in Illinois. The number of animals suffering from mastitis in infected herds varies from one animal to the entire herd. Many herds examined reveal upwards of 50 per cent infection, and in one county twenty herds were examined and no herd was found free of the disease. This disease probably causes greater losses in dairy cattle in Illinois than the combined losses from tuberculosis and brucellosis.

HOW TO CONTROL MASTITIS

Mastitis can be controlled by: (A) herd management, (B) early diagnosis, and (C) treatment.

A. Management Methods—The Owner's Responsibility

1. *Herd Management Methods.*—Dairy herd health management methods include the feeding of balanced rations, approved breeding programs, clean stables, clean cows, clean milk, and clean milkers, herds free of tuberculosis and Bang's disease, and disinfection, quarantine and isolation pro-

cedures. These measures are basic in a dairy herd health program to check the introduction and spread of disease.

2. *Mastitis Management of Cows.*—The steps recommended for handling individual cows are:

- (a) Place cows with mastitis at the end of the milking line and reduce the grain ration.
- (b) Allow no wet hand milking.
- (c) Wash udder with chlorine solution (100 parts per million) and dry with paper towel before milking.† If paper towel is not available, wring out udder cloth and use for drying udder.
- (d) Use separate clean washcloth for each animal.
- (e) Make up fresh chlorine solution after ten cows have been serviced.
- (f) Rinse teat cups with cold water and completely immerse in chlorine solution (400 parts per million) between cows.
- (g) Wash and dry hands in chlorine solution (100 p. p. m.) after stripping each cow following machine or hand milking.
- (h) Clean milking machine thoroughly with cold water and chlorine solution (400 p. p. m.) after each milking period.
- (i) Avoid the use of teat tubes and teat plugs.
- (j) Treat minor wounds promptly.
- (k) Do not use the milking machine on cows affected with mastitis.

3. *Mastitis Stable Management.*—The following measures in stable management are advised:

- (a) Keep stalls clean.
- (b) Use superphosphate or finely ground limestone in alleyways.
- (c) Use deep bedding in stall and gutter.
- (d) Clean stall and gutters thoroughly with lye (one pound to twenty gallons water) or chlorine solution (400 p. p. m.)
- (e) Protect udders from injury by eliminating loose wires on fences or gates, and file down or clip sharp horn points.
- (f) Do not milk onto the floor; milk to be discarded should be collected in a strip cup or bucket.
- (g) Dry cows off carefully.
- (h) Test first calf heifers for mastitis at beginning of lactation.
- (i) Quarantine additions to the herd from

†If desired, soap solution may be used instead of chlorine solution to wash udder and hands. Three or four teaspoonsful of powdered soap to a gallon of soft water.

*A herd program of mastitis prevention and control conducted coöperatively by dairymen, local veterinarians, the Extension Service, and the Department of Animal Pathology and Hygiene, College of Agriculture, University of Illinois.

30 to 60 days and test several times before placing in milking line.

(j) Feed calves pasteurized milk.

(k) Prevent calves from sucking each other.

B. Diagnosis—Owner and Veterinarian Coöperating

1. *Mastitis Diagnostic Tests.*—Stable and laboratory tests aid in the early detection of mastitis. Since prompt application of special methods is indicated in mastitis management, repeated tests of all animals in the herd must be carried out at intervals. No one diagnostic test is 100 per cent efficient, although repeated application of the different tests is of value in recognizing the disease in the early stages.

2. *Stable Tests to Detect Mastitis.*—(a) Strip cup: This test is used to determine whether the milk is watery, bloody, or contains flakes or clots. Rinse and empty milk from strip cup into a bucket containing a chlorine solution (200 p.p.m.). This test should be used frequently on all cows in the milking line.

(b) Bromthymol blue: Milk from quarters affected with mastitis is often alkaline, and this test is designed to demonstrate the change in the milk. Apply the test after discarding the first few streams into the strip cup. Draw 1 cc. of milk from each quarter into separate test tubes. Add three drops of the indicator (bromthymol blue). Normal milk shows a yellowish color, while milk from a mastitis quarter will give a distinct green color. This test should be made at monthly intervals. It may also be performed by means of bromthymol blue test papers, which will be supplied by the laboratory to veterinarians upon request. The results of paper tests compare favorably with those of liquid bromthymol tests.

(c) Udder palpation: Chronic mastitis is characterized by induration (fibrosis), or lumpy areas in the udder. Qualified veterinarians may detect chronic mastitis by palpating the udder. This examination should be made immediately after milking.

3. *Laboratory Tests—Veterinarian and Laboratory Coöperating.*—(a) Hotis test: This test is used to detect mastitis-producing streptococci (*Streptococcus agalactiae*).

These organisms produce acid in milk when it is incubated. Pipette one-half cc. of 0.5 per cent sterile aqueous bromo-cresol-purple (indicator) aseptically into a sterile test tube which is stoppered with a cotton plug or cork. Milk should not be taken until at least two hours after milking. Wash the udder and teats with a solution containing 200 parts per million of chlorine. Give special attention to the thorough cleansing of the external opening of the teat canal. Discard the first few streams of milk into a strip cup, and then add 9.5 cc. of milk (composite from the four quarters) to the bromo-cresol-purple in the test tube. Mixing the indicator with the milk will impart a purple color to it. Then incubate the tube at 37 C. for one day and examine. The development of a yellow color together with yellow colonies ("balls") on the sides or bottom of the tube is considered a positive reaction. A yellow color without yellow colonies is a negative reaction.

(b) Chloride test: If fibrosis of the udder has occurred, the chlorine content of the milk is increased above the normal value of 0.14 per cent or less. Two reagents are used in testing for chlorine concentration greater than 0.14 per cent. These are silver nitrate solution (1.3415 Gm. accurately weighed, in a liter of distilled water, and stored in a brown bottle or in the dark), and 10 per cent potassium chromate solution. To make the test, place 5 cc. of the silver nitrate solution in a test tube, and add 2 drops of potassium chromate solution. Add an accurate 1 cc. of milk and mix contents of tube. If the color becomes yellow in one minute or less, the reaction is positive; if it remains red, the test is negative.

(c) Microscopic test: This test is used to determine the presence of streptococci and other bacteria, and the approximate numbers of leucocytes. The same precautions to prevent contamination during collection of the sample should be used as are described for the Hotis test. A preservative which helps prevent the growth of contaminants may be used if desired. Prepare the preservative by dissolving 0.75 Gm. sodium azide, 0.2 Gm. brilliant green, and

10 Gm. dextrose in 200 cc. of distilled water, filtering, and sterilizing under 15 pounds of pressure for 20 minutes. Then pipette 0.1 cc of the solution aseptically into each tube (for 5 cc. of milk) before the sample is drawn.

Bacteriologic examinations of milk samples from coöperating herds are made without cost at the University Animal Pathology Laboratory. Local veterinarians will be instructed in methods of collecting samples.

C. Mastitis Treatment—The Veterinarian's Responsibility

1. *Treatment.*—Selection of cases of mastitis in the early stages is made possible by the use of diagnostic tests. Treatment includes the injection of antiseptics into the udder. Care must be taken in introducing the antiseptic solution to avoid injuring the quarter and to prevent the introduction of outside infection. Successful treatment does not restore nonfunctional mammary gland tissue but destroys streptococci in the udder and arrests the progress of the disease. Treatment before the udder tissue is destroyed is indicated.

Selected animals with chronic mastitis may be treated by the veterinarian with colloidal silver oxide, iodine, gramicidin, acriflavine, and possibly other chemicals. After treatment of the animal, milk from affected treated quarters will be examined for streptococci by the Animal Pathology Laboratory in coöperation with the local veterinarian to determine whether the treatment has proven effective. The combined results of stable and laboratory tests, together with the value of the animal, will be the basis for selecting animals for treatment.

MOBILE UTILITY TRUCK FOR MASTITIS CONTROL

To expedite sanitary measures and testing for mastitis, a mobile utility truck provided with the following equipment may be useful:

1. Strip cup and strip cup bucket.
2. Enamel buckets:
 - (a) One containing individual udder towels immersed in a chlorine solution of 200

parts per million.

- (b) One for used udder towels.
- (c) One for cold water for immersing teat cups.
- (d) One for hot water for washing hands.
- (e) One for strip cup milk.
3. Measure for making a solution of 200 and 400 parts of chlorine per million.
4. Zinc oxide ointment or other healing ointments.
5. Mastitis test materials.
6. Daily milk record forms and scales.
7. Racks and vials for collecting milk samples.
8. Pencils for recording data.
9. Hand towels (paper).
10. Container for used paper towels.

Oyster Shells as a Mineral Supplement

To what extent oyster shell is employed as a supplement for animal feeds (other than grit for poultry) is not common knowledge in the veterinary profession whatever may be the situation among the experts of animal-food production.

Finely ground oyster shells is a logical prescription for mineral deficiency, being comparable to the bone meal of the mammalian skeleton, and is certainly more "biologic" than the inorganic elements and salts used commonly in the treatment and prevention of mineral deficiency. The sea, original birthplace of living things, is a famous biological laboratory.

Oyster shell contains nearly as many of the atomic elements as the living body of higher life. It has the iron, copper, calcium, zinc, magnesium, manganese, aluminum, silicon, and carbon needed for mineralization and the oxygen, hydrogen, chlorine, and nitrogen for making up the organic compounds of living structure. A comprehensive treatment of the subject would be useful.

The administration of vitamin A and of nicotinic and pantothenic acid of the B complex was found effective in the treatment of calf scours and calf pneumonia by workers at the University of Wisconsin (Phillips, Lundquish and Boyer)—From *Journal of Dairy Science*, November, 1941.

W. T.

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Sulfapyridine in the Treatment of Calf Pneumonia*

W. T. S. THORP, D.V.M., M.S.; J. F. SHIGLEY, B.Pd., D.V.M.; and A. K. ANDERSON, Ph.D.

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THE MORBIDITY and mortality of calf pneumonia is highest in calves ranging in age from 2 to 10 weeks. In a large percentage of cases it is a sequel to calf scours. Calf pneumonia usually comes on suddenly, first manifesting itself by a dry cough, extreme lacrimation, a rise in temperature (104.8 to 105.5 F.), and usually a high blood leukocyte count. Manifestations of a bronchopneumonia soon follow the above symptoms. Carpenter and Gillman¹ described the lesions briefly and suggested, streptococci, staphylococci and coliform organisms as possible causative agents. The tissue changes have been described by Thorp and Hallman² which is briefly a subacute or chronic bronchitis associated with consolidation of the lungs which begins in the anterior lobes and progresses posteriorly involving a variable portion of the diaphragmatic lobes.

Calf pneumonia is a serious problem in many large dairy herds in widely separated portions of the country. Sanders³ describes the condition in Florida and attributes it to a weakened condition of the calf due to parasites and an adverse environment, which is followed by an infection with *Pasteurella bovisepitiosa*. Recent work at this station suggests either a *pasteurella* organism or some form of the hemophilus group of organisms⁴.

The cases considered here are from one large dairy herd in which 15 per cent to

20 per cent losses from calf pneumonia had occurred during the winter and spring months. Twenty-five per cent of the cases of pneumonia followed calf scours.

The use of sulfapyridine in calves has been reported by Ehlers⁵ in calf septicemia. It has been used successfully by Farquharson⁶ in the treatment of calf diphtheria. A study of the administration of sulfapyridine to the mature bovine has been reported by Klein, Kleckner and Biltz⁷.

With the above reports in mind and other uses to which sulfapyridine has been put an attempt was made to use it in the treatment of calf pneumonia during the past winter and spring.

SULFAPYRIDINE THERAPY

All calves in this herd which showed typical symptoms of pneumonia were hospitalized and sulfapyridine treatment started. Table I gives a summary of the 16 calves treated. The dosage was determined on the basis of weight and varied somewhat in individual cases. However, the initial dose ranged from 0.05 to 0.1 Gm. per lb. of body weight. In some animals the total daily dose was divided into two doses administered morning and night while in others the total dose was divided and given three times per day about six hours apart.

In calves 11 and 16, the initial dose for the first two days was high and then reduced for the remaining three days of treatment. The response in these calves was the best of any treated. In calf 13, there was no response to the sulfapyridine

*Authorized for publication on September 9, 1941 as paper No. 1048 in the Journal Series of the Pennsylvania Agricultural Experiment Station.

¹Carpenter, C. M. and Gilman, H. L., Studies in Pneumonia in Calves. Cornell Vet. xi (1921), p. 111.

²Thorp, W. T. S. and Hallman, E. T., Pathology of Calf Pneumonia. J.A.V.M.A., xciv, Part II (April 1939) p. 365.

³Sanders, D. A., Enzootic Bronchopneumonia of Dairy Calves. Tech. Bulletin 346, Florida Agr. Exp. Sta., June 1940.

⁴"Studies on the Etiology and Pathology of Calf Pneumonia." Unpublished data presented at the Research Section, 78th annual A.V.M.A. convention, Aug. 13, 1941.

⁵Ehlers, D. C., Sulfapyridine in Calf Septicemia. Veterinary Medicine, xxxv (June 1940), p. 329.

⁶Farquharson, James, Sulfapyridine in the Treatment of Calf Diphtheria. J.A.V.M.A., xcvi (1940), p. 431.

⁷Klein, L. A., Kleckner, A. L., and Biltz, R. O. Sulfapyridine in Cattle a Contribution to Its Pharmacology. Presented at 77th Annual Meeting, Abstract J.A.V.M.A., xcvi (Nov. 1940), p. 514.

TABLE I—Summary of Sixteen Cases of Calf Pneumonia Treated with Sulfapyridine

CALF NO.	AGE IN WEEKS	WEIGHT LBS.	INITIAL TEMP. °F.	TEMP. IN 24 HRS. °F.	INITIAL LEUKOCYTE COUNT	LEUKOCYTE COUNT AFTER TREATMENT	TOTAL DAILY DOSAGE, GMS.						No. OF DOSES* PER DAY	RESULTS
							DAYS							
							1ST	2ND	3RD	4TH	5TH	6TH		
1	4	75	104.2	101.8			5.	5.	5.	2.	1.		2**	Recovery
2	3	80	103.8	101.5			5.	5.	5.				2	Recovery
3	1	60	103.2	101			5.	5.	5.	2.	2.		2	Slow Recovery
4	4	80	103.8	102.2			5.	5.	5.				2	Fair Recovery
5	2	70	104	102			5.	5.	5.				2	Fair Recovery
6	4	70	103.8	101			5.	5.	5.				2	Slow Recovery
7	5	75	105	102	12,500	7,800	5.	5.	5.	2.	1.		3	Good Recovery
8	3	70	104.2	103	11,500	7,600	5.	5.	5.	2.	2.		3	Good Recovery
9	2	80	104.1	102.8	15,800	8,000	5.	5.	3.	2.	2.		2	Recovery
10	4	82	104.5	103.2	16,000	8,200	5.	5.	5.	2.	2.	2.	2	Recovery
11	1	85	102.8	101	14,200	7,900	7.5	5.	5.	2.	1.		1st da. 3 other 2	Good Recovery
12	2	90	104.2	102	15,200	9,000	7.5	7.5	5.	2.	1.		1st da. 3 2nd da. 3 3rd da. 2	Good Recovery
13	3	90	104	102.5	17,000	17,500	7.5	7.5	5.	2.	1.		Same as No. 12	Died
14	2	95	103.8	101.8	15,000	8,500	7.5	5.	5.	1.			Same as No. 12	Good Recovery
15	3	90	104.5	103	14,500	2,600	5.	5.	2.	1.			2	Died
16	3	80	104.5	102	18,800	10,000	7.5	7.5	5.	5.	1.	1.	3	Good Recovery

*All doses given orally as a drench

**Division of total daily dosage

whatever with practically the same treatment as calves 11, 12 and 16. At the autopsy of calf 13, a subacute pneumonia was observed in the anterior lobes of both lungs with about one-half of the diaphragmatic lobes showing an acute pneumonia. There was, in addition to the pneumonia, an extensive nephritis associated with numerous congenital cysts in the kidneys. The nephritis and the congenital cysts probably accounted in part for the lack of response to the treatment. This calf had received a three-day treatment of sulfapyridine five days previous to the treatment reported here. Severe scours preceded the pneumonia treated in this case. In the case of calf 15, the pneumonia followed a severe attack of scours and upon autopsy the typical lesions of an acute bronchopneumonia were observed. A severe nephritis was

noted with a small number of urinary calculi in the pelvis of the kidney. Upon microscopic study of the tissues, subacute to chronic inflammatory changes were observed in the interstitial tissues of the kidney. Moderate degeneration of the tubular structures was observed which probably was the result of the severe scours preceding the pneumonia. The lowering of the erythrocyte count to 3,200,000 and the neutropenia observed during the last two days of treatment were characteristic of the toxic symptoms described in other subjects.

EXPERIMENTAL CALVES

Of the eight calves given sulfapyridine, two were acute cases of pneumonia and six were normal calves treated in an effort to study the relation of dosage to the blood level of sulfapyridine for different ages

*Brat Chem.,

CALF NO.

1

2*

3*

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*Ch

and weights. All the total daily dosages were divided into three equal doses and given approximately every six hours. The free sulfapyridine in the blood was determined by the method described by Bratton and Marshall⁸.

A summary of the data for this group of calves is given in table II. Calves 2 and 3 which were diagnosed as acute calf pneumonia responded very well to the treatment which produced an average blood level of 4.12 mgs. per cent for calf 2 during the first four days and 5.75 mgs. per cent for calf 3 over the same period. The initial dose in the latter was the highest. Calves 1, 4 and 5 are probably the most ideal blood levels to maintain.

In these three calves, a large initial dose was given for the first two days and then gradually reduced. Calves 6, 7 and 8 were given large doses to determine the upper limits of the blood level for sulfapyridine. In all of these calves, toxic symptoms were observed after two days of treatment. It will be noted from table II that in all of these cases the average blood level of sulfapyridine is 10 mgs. per cent or above. Toxic symptoms were not pronounced in

calves 6 and 7, but microscopic examination of the blood revealed some anemia and a rise in the blood leukocyte count. The most pronounced symptoms were observed in calf 8, which upon autopsy showed numerous calculi in the pelvis of the kidney and many yellowish white streaks in the pyramids. Microscopically, sections of the kidney showed some hemorrhage into the tubules and a few tubules contained a small number of casts.

DISCUSSION

The response to treatment with sulfapyridine differed in individual calves, however, certain consistent changes were observed. Calves receiving a large initial dose followed by a subsequent reduction of the dosage made the most rapid recovery. Calves 13 and 15 of table I would indicate that in cases where other pathology was present, sulfapyridine would be contraindicated.

On the basis of the two groups of calves it is obvious that age differences along with body weight is an important factor in regard to the calf's tolerance to the administration of sulfapyridine. In the younger calf large dosages should not be continued for any length of time. Deter-

TABLE II—Blood Determinations on Eight Experimental Calves

CALF No.	AGE	WT. LBS.	TOTAL DAILY DOSAGE, GMS.						MGS. % OF FREE SULFAPYRIDINE IN THE BLOOD						TIME SAMPLE WAS DRAWN	REMARKS
			1ST	2ND	3RD	4TH	5TH	6TH	1ST	2ND	3RD	4TH	5TH	6TH		
1	2 weeks	95	7.5	7.5	5.	5.	2.	2.	2.30 7.24	7.38 7.78	9.66	7.55	6.06	2.80	9 AM 3 PM	Normal
2*	2 weeks	75	5.	5.	5.	2.	1.		4.65	3.49	5.32	3.03	2.60		9 AM 1 PM	Recovered
3*	6 days	80	7.5	5.	2.	2.	1.		5.00	6.35	7.64	4.76	1.42		9 AM 1 PM	Recovered
4	2 weeks	102	7.5	7.5	5.	5.	2.	2.	6.35 9.63	7.28 8.17	8.69 6.78	9.65 10.41	4.68 4.12	2.31 2.42	1 PM 9 PM	Normal
5	5 weeks	150	7.5	7.5	5.	5.	2.2	2.	3.55 7.78	6.39 8.27	7.50 6.92	5.19 5.87	4.62 3.74	2.39 2.22	1 PM 9 PM	Normal
6	4 weeks	130	12	12	4	4	3.	3.	2.07 6.05	8.20 9.39	7.75 15.74	12.90 14.12	10.58 8.93	4.26 3.81	1 PM 9 PM	Slight evidence of Toxicity
7	8 days	95	7.5	7.5	5.	5.	2.	2.	6.72 10.52	6.34 10.45	10.69 9.55	4.79 9.05	5.41 5.71	3.55 2.93	1 PM 9 PM	Toxic Symptoms
8	5 days	75	7.5	7.5	5.	5.	2.	2.	1.30 4.08 9.39 10.73	9.31 10.80 14.19 11.15	13.96 16.00 13.46 16.05	15.62 12.55 13.32 12.28	20.62 21.74 Died		9 AM 1 PM 5 PM 9 PM	Died

*Clinical symptoms of acute calf pneumonia

minations of sulfapyridine in the blood of the experimental calves indicate that the blood level of sulfapyridine should not exceed 10 mgs. per cent. The most desired level appears to fall between 5 and 8 mgs. per cent. In the younger and smaller calves, 5 and 6 mgs. per cent is probably sufficient while in larger and older calves a slightly higher level would probably give better results. The level of sulfapyridine in the blood of calves is not proportional to the dosage per pound of body weight. On the basis of the two groups of calves administered sulfapyridine in the course of this work the following daily dosages can be recommended. In calves up to 70 lb., 0.05 Gm. per lb. of body weight, calves 70 to 100 lbs. 0.06 Gm. per lb. of body weight, and over 100 lbs., 0.07 m. per lb. of body weight. These dosages are higher than that recommended by Farquharson for the treatment of calf diphtheria, however, no intravenous dose was given as the initial dosage. Higher dosages were given without severe symptoms of toxicity appearing. On the basis of the cases treated, a reduction of 0.02 Gm. per lb. of body weight every two days is deemed advisable since there is some evidence that the drug may be accumulative. The dosage should be given three times daily and in proportion in age and weight.

SUMMARY

1. Twenty-four calves were given sulfapyridine, 18 of which had symptoms of acute bronchopneumonia.

2. Blood determinations were made on eight of the calves given sulfapyridine. These results indicate that the blood level should not exceed 10 mgs. per cent.

3. A significant rise in the leukocyte count, followed by a neutropenia and lowering of the erythrocyte count, were observed in the cases where toxic symptoms occurred.

4. Younger calves were more subject to symptoms of toxicity. The following initial dosages are suggested, Calves up to 70 lb., 0.05 of Gm. per lb. of body weight; calves 70 to 100 lb., 0.06 of Gm.; and calves over 100 lbs., 0.07 Gm. per lb. of body weight.

5. It is realized by the authors that blood determinations were only made on eight of the calves and that the total number treated is small. Caution should be observed in the use of the drug, but it shows promise of being a fairly reliable treatment for calf pneumonia.

ACKNOWLEDGMENTS

The writers wish to thank Professor A. A. Borland and Mr. P. D. Jones of the Department of Dairy Husbandry for providing certain facilities and experimental calves for this work and to Mr. Frank Singer of the Department of Agricultural and Biological Chemistry for assistance in the blood determinations, and to E. R. Squibbs and Sons, New York, for their co-operation in providing the sulfapyridine.

The Food Budget

The nation's expenditure for food exceeds all other national expenditures—housing, clothing, transportation, amusement and the cost of the national government. The retail sales of food for 1939 amounted to \$42,023,818,000, \$5,000,000,000 less than in 1929.—*From Food Industries.*

It is estimated that the federal expenditure for running the government will be around \$17,500,000,000 for 1941.

Peacetime Patriotism

The preparedness of the medical, dental and veterinary professions is an example of peacetime patriotism, for when their precincts were canvassed for mobilization and utilization in the nation's defense, they were found not only prepared within the military set-up but also organized for quick expansion. The strange pacificism which has waved the costly banner of unpreparedness with wrecking effect for more than a century failed to stop the medical groups from doing their duty. They fought difficult battles for the use of medical knowledge within the armed forces in times of peace and as a gift they have "what it takes" when war comes along.

Small Animal Hospitalization, Sanitation and Parasite Control*

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THE SUBJECTS of hospitalization, sanitation and parasite control cover an immense field, far too large for one article. So I shall have to be brief.

Hospitalization.—To me, the main objects of hospitalization are diagnosis, treatment and isolation. In regard to the latter, the danger of exposing dogs to distemper in a small animal hospital is present always, if the dog is young and not immune. The best plan is to give him a dose of homologous distemper serum (1 to 2 cc. per pound of weight; the poorer the condition, the larger the dose of serum). It is cheaper in the long run to immunize such dogs free of charge than to take the chance of the dog coming down with distemper and make the owner a walking advertisement against you. All the rest is mostly a matter of cleanliness, of clean litter and cages. Clean papers should be kept in the cages and changed as often as they become soiled. When the patient is dismissed, the cage is thoroughly cleansed by scalding if the cage construction permits; if not, then by the use of disinfectants that are not injurious to dogs and cats; by scalding feed and water pans daily and setting aside certain cages for distemper, mange, ticks and external and internal parasites. The outside runs should be made of smooth cement with plenty of slope for drainage. Cracks or crevices in the cement are chemically disinfected or burnt with a blow torch. The runs are cleaned daily. Dogs infested with worms are not placed in the same kennels with other dogs, but if the same kennels are used, they are cleaned before another dog is put in. Dirt floors are hard to keep free from worm eggs and mange parasites. Such floors can be freed of worm larvae by sifting finely powdered copper sulfate over the ground and digging up one or

two inches, and then tamping it down. The kennel should have a dipping vat to use in treating external parasites and certain types of skin irritation.

The important external parasites are: (1) mange mites, (2) ticks, (3) fleas, (4) lice, (5) ear mites.

Sarcoptic mange can be helped, and many times is cured, by dipping. Demodectic mange requires more careful treatment.

Ticks are a menace, especially in the South. There are 14 kinds of ticks which infest dogs. The two most common kinds are the American dog or wood tick, *Dermacentor variabilis*; the other, the brown dog tick, *Rhipicephalus sanguineus*. These two species are dangerous to dog and man. The brown dog tick may carry Rocky Mountain spotted fever to man. They can cause paralysis in dogs, great loss of blood, otorrhea, and many other aggravating conditions. Dog ticks have become abundant in the South. They are getting into homes where dogs are allowed. The engorged female drops off the dog, crawls on the furniture, picture moldings and baseboards where she deposits as many as 2,000 to 3,900 eggs, which hatch in 17 to 30 days and start the life cycle over. By the time many of these females have laid their eggs and have hatched, the housewife is frantically asking for help and she usually calls on the veterinarian. Pyrethrum in oil will exterminate them where it can be used. Fumigation with sulfur dioxide or cyanide is dangerous unless handled carefully. I usually suggest that they call on the exterminating firms for their homes, and I prescribe for the dogs, dog houses, yards, and basements. For these, I use 1 quart of government arsenical dip to 40 gallons of water to dip the dogs. If the dog has tender skin around the inguinal and scrotal regions, I grease them with castor oil or lard before dipping. Kyso Dip, manufac-

*Presented before the Section on Small Animals at the seventy-eighth annual meeting of the AVMA, Indianapolis, Ind., August 13, 1941.

tured by the Standard Oil Company of Kentucky, a teacupful to a gallon of water as a dip, has proved satisfactory in the few trials I have given it. It can be repeated once a week. Do not leave the dog in the hot sun after dipping with anything, as he might blister. I use also a preparation called "Ryko" which will kill all external parasites. Tickicide and many other preparations are also good. For spraying basements, dog houses and kennels, $\frac{1}{2}$ gallon of arsenical dip in 40 gallons of water, for grassy yards, 2 oz. of pine oil to a gallon of water for spray is used.

Fleas can be exterminated easier than ticks. Just bathe the dog with a good soft soap and use 1 oz. of pine oil to the gallon of water. Rinse the soap off with a clear solution of the oil so that the pine oil odor will be left on the dog. For cats, use pine oil $\frac{2}{3}$ of the strength for dogs. Two ounces of pine oil to the gallon of water can be sprayed in kennel yards, grass, etc. Sprinkle fine salt on basement floors or dirt where one cannot spray effectively.

For lice I have yet to find any preparation which will beat "Ryko." It will kill both adults and the eggs. However, there are many other good preparations on the market from which to choose.

For ear mites again "Ryko" is the best. Many other preparations such as pellitol, sulphurated ointments, Well's solution, 5 per cent tannic acid with 4 per cent salicylic acid and 2 per cent glycerin in alcohol, and many others are highly recommended.

Internal parasites are a problem. The warmer the climate, the more prevalent they are. There are internal parasites wherever the dog and cat exist. From the standpoint of injury to dogs and loss to the owners, I rate them as follows: (1) hookworms, (2) ascarids, (3) heartworms, (4) tapeworms, (5) coccidia. Then there are whipworms, flukes, tongue worms and canine piropasma. I have not found the latter to be very abundant.

Hookworms:— I believe *Ancltyostoma canium* and *Uncinaria stenocephala*, commonly called hookworms kill more dogs, especially pups, than any two or three other

types of worms. I have seen puppies two weeks old infested with hookworms. They are bad blood suckers and injure the linings of the intestines so the blood will ooze out. Five hundred adults will drain off a pint of blood every 24 hours. They also poison the blood with some kind of substance which they secrete. No doubt many pups are born with hookworm larvae which they get from the blood stream of their mother. There is sufficient literature on treatment, but many times I have found that patients need blood transfusions to build up their blood both before and after "worming." The mother should have a careful fecal examination before being bred, and several times during pregnancy. If stools are positive for worms, she should be "wormed" every week until stool tests are negative.

Ascarids: There are two kinds of round worms common to dogs. A white colored worm called *Toxascaris leonina* is more prevalent in older dogs, and the yellow colored type called *Toxascaris canis* generally infest the puppies. The cat may have the white type and also a type called *Toxascaris catti* which is more yellow. They all lay hundreds of eggs which are passed out in the fecal matter. These develop in 2 or 3 days until each egg is an infective embryo. The eggs are swallowed by dogs and cats, hatch out, and the young worms get into the walls of the digestive tract, enter the blood stream or lymph channels, then through the portal system to heart, lungs, and finally, they leave the lungs ascend to the mouth where they are again swallowed, finally reaching the small intestines. There they grow into adult worms and the female starts laying eggs in a few weeks. I have seen cases which were no doubt infected in the mother's uterus. The pup died at 9 days old and autopsy showed small roundworms the size of sewing thread and two inches in length. These worms may become so numerous in pups that they block the intestinal lumen. They may produce unthriftiness, emaciation, digestive disturbances, vomiting, pear-shaped bellies, and they may even get into the lungs by going from the stomach up the oesophagus,

and down the trachea, and in turn, produce pneumonia in which case death generally follows.

Heartworms (*Dirofilaria immitis*) of dogs, sometimes of cats:— This worm has become a great problem and is getting worse all of the time. It has spread from the South to as far north as Canada. It is transmitted by several kinds of mosquitoes, and ticks have been found to be an intermediate host. I believe many other blood-sucking parasites are also transmitters. So far, we have no way of entirely preventing the mosquito from biting the infested dog and spreading filaria.

Another parasite which is causing lots of worry is the so-called oesophageal worm *Spirocerca sanguinalenta*, which is often mistaken for the heartworm when blood is being examined microscopically. The adult worms are reddish in color, coiled in a spiral, and they encyst in the walls of the oesophagus, upper part of stomach, and aorta. They are said to be transmitted by a beetle, then ingested by another host, or the second host, to be eaten by the dog or cat. They are said to lay their eggs and pass out in the fecal matter, but I fail to see how the eggs can pass out through this canal from cysts which are inside of blood vessels and other parts of the body which are not directly connected with the alimentary canal. Their reproduction differs from the heartworm as it is generally agreed that the heartworms give birth to their young. The oesophageal worms form cysts in the oesophagus, stomach and some large thoracic blood vessels. When cysts are present in the oesophagus and stomach, they may cause vomiting, complete stoppage of the oesophagus, emaciation and finally starvation. If blood vessels are involved, they usually have stenosis or anurism. As a preventive, infected animals should be isolated and disposal made of their vomitus and feces. Healthy dogs and cats should not be allowed to eat beetles, frogs, mice, lizards, and dung. Any of these may carry the larvae.

There is a collar on the market which carries a wick in between the layers of

leather with perforated holes so a fluid can be injected to soak the wick. This will help to keep off fleas, ticks, and mosquitoes. Fuadin is accepted as one of the best treatments for heartworms, although there are others of merit on the market such as Filsol and Stibsol.

Tapeworms are very common and can be controlled by sanitation, testing and watching stools for segments. Microscopic examinations of stools are not very satisfactory but often you can give an enema with turpentine soap and wash out segments for the diagnosis; at other times, a segment will crawl out and hang on the hair of the hind limbs and owners will say their dog has pin or rectal worms which are in reality segments of tapeworms. Many tapeworm medicines are to be recommended.

Coccidiosis has either become suddenly devastating to pups and young dogs or we did not recognize it until a few years ago. It is manifested by bloody diarrhea, anemia, general emaciation, and sometimes pus in nostrils and eyes. A diagnosis is easily made by use of the microscope and centrifuge with a good specimen of fecal matter. Treatment is far harder than the diagnosis. I am now experimenting with sulfaguanadine and so far, the results have been favorable. Spray infested places with hot coal tar, creosote solution or use dry heat. All of these are destructive to the oöcysts but coal tar and creosote solutions cannot be used where cats are exposed.

In closing I want to say a word more about distemper. I believe this disease has killed more dogs than all the other diseases, especially before distemper serums and vaccines were improved to where they are of real value. I do not believe it is possible to keep distemper entirely out of a hospital but one can reduce it to a minimum with cleanliness and plenty of serum. I do not believe a distemper ward will keep it out unless it is apart from the building, and the attendants are never allowed to come in the general ward. Even then, someone has to treat the distemper patients and if it is to be you or your assistant, he will

The Value of Intravenous Calcium Chloride and Glucose in Uterine Inertia of Cows*

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OBSERVATIONS by Patton and Mussey, Mayo Clinic, Rochester, Minnesota (*American Journal of Obstetrics and Gynecology*, June, 1941) on the use of intravenous calcium in cases of human uterine inertia during slow labor prompted us to attempt similar work on certain cows in the college dairy herd. The cows selected for the observations had definitely known previous calving dates and a history of protracted labor during prior calvings.

The general condition of these cows was noted, together with data on attacks of milk fever, retention of the placenta, number of previous calvings, and presence or absence of dystocia.

In a few instances, cows which the herdsman selected as having had previous protracted labor were injected with calcium chloride and glucose one day before or at the first sign of parturition. Several had histories of severe attacks of milk fever.

However, most of the cows were injected with calcium after labor was established

*Presented at the annual meeting of the Oklahoma State Veterinary Medical Association, January 12-13, 1942, Oklahoma City, Oklahoma.

*From the Oklahoma A. and M. College.

(Continued from preceding page)

bring the virus in on his clothes or feet. Moreover, there are many hundreds of small animal practitioners throughout the United States and Canada who are not financially able to build expensive hospitals with distemper wards. I myself, built a distemper ward, and I can truthfully say I lost more patients from distemper in that ward than I had lost before. I demolished the ward, and practiced what I have just set forth, namely, homologous distemper serum and cleanliness.

and a vaginal examination revealed the position of the fetus normal and the os uteri dilated.

The Solution.—A 20 per cent solution of calcium chloride and 50 per cent solution of dextrose in physiological saline was used in amounts ranging from 50 to 250 cc. A 14-gauge, 3-inch needle was inserted full length into the lumen of the jugular and the solution allowed to flow into the circulation by gravity from a "Simplex Outfit." Most of the cows were in the standing position. The restraint consisted of full extension of the head and neck. About 15 minutes was allowed for gravitation of the solution into the vein.

At no time was there any distress evidenced by rapid respiration, uneasiness or cardiac palpitation. We examined the heart with a stethoscope before starting the injection so as to elude possible complications due to traumatic pericarditis.

Indications.—As in slow labor (human) it was thought that calcium salts intravenously might be used to accelerate uterine contractions in the cows that had shown protracted labor in the absence of dystocias.

The ideal cases for the use of calcium would be those in which labor has been definitely established and the uterine contractions are weak, feeble or arrhythmic, indicating the need of general as well as uterine stimulation.

Contra-indications.—Contra-indications are the presence of maternal or fetal abnormalities which can not be manually corrected, and cows with diarrhea or loose bowels.

Conclusions.—Following the intravenous injection of a calcium chloride and glucose solution to parturient cows, uterine con-

tractions were stimulated by improving the tone and rhythm.

Such cows were delivered with less effort than at previous calvings and time of delivery was shortened. Furthermore, the treated cows ate and drank well, appeared stronger, and gave more milk. None of the cows developed milk fever or swollen, painful udders.

Newborn calves from the treated cows were definitely benefited. They were more alert, stronger, nursed sooner and appeared to have better resistance against calf scours and pneumonia, troubles that are often predisposed by delayed labor.

SUMMARY

1. Calcium salts given intravenously had a general stimulant effect on parturient cows.
2. Nervousness and uneasiness were practically eliminated.
3. Calves from treated cows were stronger and more active.
4. Some cows developed definitely increased intestinal peristalsis.
5. The duration of uterine contractions was apparently not changed.
6. Placental membranes did not have to be removed manually from the treated cows as had been the case in previous calvings.
7. It is suggested that calcium salts be used to accelerate uterine contractions in all species of animals exhibiting slow parturition.

Remedy for Cattle Sunburn

Country Gentleman, January, says that livestock owners in Merced County, California, have adopted an unusual method of protecting Hereford cows from photosensitization, or cattle sunburn, a strange disease which attacks cattle having white skin areas. Herefords affected by this disease break out with ulcerous sores on their white parts. A mixture of crankcase oil and lampblack, smeared in a thick coating over the white parts of the cows, has been found to protect them from the disease.

Intravenous Anesthesia: Short Action Barbiturates

The use of intravenous anesthesia dates back to 1872 when Ore of France used chloral in that way. The intravenous use of hedonal was practiced in Russia in 1905. In Germany, ether and chloroform given intravenously was given a brief trial in 1909. Avertin was used in Germany by Kirschner in 1929. Barbiturates were first used by Fredet in France in 1924. The anesthetic employed was somnifen, a mixture of barbital and dial. Bumm of Germany introduced pernoston in 1927. In 1929, sodium amytal was used in this country by Zerias. Nembutal (pentobarbital) was first tried in this country in 1930 for the purpose of producing a prolonged postoperative sleep. Pentothal sodium came into use in 1934 at the Mayo clinic. Although short acting, it has many uses (biopsies, curettage, painful removal of dressings, reduction of fractures, etc.). In dogs, it tends to protect against shock and because it leaves the blood stream quickly it is not contraindicated in diseases of the liver and kidneys. Over-dosing which is detected by cessation of respiration is treated by performing artificial respiration, stopping administration and by administration of oxygen, carbon dioxide, nikethamide, metrazol or picrotoxin. The short acting barbiturates are anesthetics of choice in numerous surgical procedures. [Searles, Paul W., M.D., *Intravenous Anesthesia*, J.A.M.A. cxvii (Jan. 10, 1942), p. 117.]

Sulfanilamide in Coccidiosis of Cattle

After treating calves affected with clinical and subclinical coccidiosis for three days with sulfanilamide, oöcysts (*Eimeria zurni*) disappeared from the feces. Although the number of cases treated was limited, the authors believe that the treatment has a markedly curative effect if the drug is kept constantly in the body during that length of time.

This rubber shortage is going to take you back to the days of tire pumps, cold patches and blowout boots.

Field Experiments on Keratitis in Cattle*

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THIS PAPER is presented from data compiled over a period of 12 years and is taken from actual field work. I shall endeavor to cover the different forms of keratitis as observed and also some of the preventive measures and treatments used. The main discussion will be of true infectious keratitis of cattle. But I shall also make comparisons of forms and causes of other lesions of the eye which are closely related.

Economically, true keratitis ranks high. In western Kentucky where there are large numbers of small dairy herds of the Jersey breed, this disease is costly through losses of milk production. A survey made in 1938 on 10 herds, with an average of 21 cows, showed an incidence of 12 per cent and in some herds as high as 40 per cent. The average loss of milk in these herds was 32 per cent, computed from the average yield of herds where the milk is weighed. We also raise and market baby beeves. Here, infectious keratitis decreases the milk production of the mothers as well as the weight and growth of the offspring. In the last few years our farmers have also started to buy and raise feeder steers which on numerous occasions contracted keratitis to such an extent that a large percentage of them classified as second and third grade when sold.

For these reasons, more work should be carried out to determine the cause, and make the treatment more perfect. There also should be more laboratory work carried out on preventive measures.

In western Kentucky, infectious keratitis affects cattle of all ages and breeds, though it is observed more in Jersey herds. Old cattle seem to show far greater resistance than young ones.

INFECTIOUS KERATITIS

In my early days of practice, I did what other practitioners have done and that is

to call all inflammations of the eye true keratitis and treated them as infectious. We treated several herds from this point of view and some good results were obtained, but the majority did not respond. A few herd owners said that the bacterins did not help; others claimed it was the only thing to do. From these opposing opinions, it was obvious that the true causative factor of infectious keratitis was unknown or that more than one form exists. We have found *Corynebacterium pyogenes*, *Escherichia coli*, streptococci, staphylococci, and *Pasteurella bovisseptica* in the secretions of infected eyes. In my field work as far back as 1935 I was able to transmit pink eye from an infected eye to a clear one with swabs. However, in some instances, the inoculation was negative. Farley of Kansas State College transmitted true keratitis from one eye to another at will. Some of our investigators have produced infection by the injection of cultures of *Cor. pyogenes* into the epithelial structure of the eye. Some technicians, without proof, have suggested that perhaps the agent is a filterable virus. So, we still work with the visible organisms.

ALLERGIC KERATITIS

Keratitis, of course, is inflammation of the cornea but there are lesions of the eye of the same character from other causes. One is of the allergic type, presumably caused by contact with vegetable proteins or the ingestion of certain plants of the pastures. The symptoms and lesions of the allergic type and true pink eye are identical. It is practically impossible to differentiate one from the other.

NUTRITIONAL KERATITIS

Another important type of keratitis is called nutritional keratitis, caused by the deficiency of vitamin A. Vitamin A, the antiophthalmia vitamin formed by the body

*Presented before the Section on General Practice, AVMA, Indianapolis, Aug. 13, 1941.

from the plant pigment carotene, when deficient causes keratomalacia with dryness, ulceration and perforation of the cornea. If the history and the symptoms were not considered, one could not tell one of these types from true keratitis. There is, of course, a small percentage caused by injuries. The part played by the vitamin B complex, if any, is not known.

Diagnosis.—In diagnosing an outbreak of keratitis one should obtain all the history possible in order to determine whether it is infectious, allergic, or nutritional. There are also miscellaneous causes. The number of animals affected will help to determine the class to which the case belongs. In true keratitis, usually the morbidity does not run over 30 to 35 per cent and the adults as well as the young are affected. In the allergic type, the percentage is about the same, but in nutritional keratitis the incidence runs high and it attacks only the young animals. In vitamin A deficiency also, the incidence varies. The history of a herd fed a deficient diet helps in making the diagnosis.

SYMPTOMATIC FORMS

True keratitis may be divided into three stages according to severity:

(1) A *mild type* with but slight cloudiness of the cornea, congestion of the cornea and conjunctiva, and usually a watery discharge from the affected eye.

(2) *Acute type* which in my section is the most commonly seen, presents photophobia, marked lacrimation, cloudiness of the cornea, and conjunctivitis. These are the main symptoms. The process spreads rapidly over the entire cornea. Often the content of the anterior chamber is extruded and replaced by a mass of pus-like tissue. When the whole cornea is involved there is total blindness.

(3) *Chronic type.* Secondary pyogenic infection usually develops when ulceration of the cornea occurs. In that event there is extensive involvement of the cornea, iris, membrana nictitans, and anterior chamber. The animals become totally blind and in some cases enucleation of the eyeball

is necessary. This type is seen more often in cattle that have been exposed to sunlight, dust and heat. It is rare in cattle that are treated and kept in dark stalls.

We have found that the incubation period of infectious keratitis varies. In actual artificial transmission with infected material, keratitis will develop in 3 days to 3 weeks.

The mode of transmission of true keratitis is definitely unknown. It is a disease of hot, dry weather and rarely occurs at any other season. Experiments on transmission have failed. Farley attempted to prove that the common flies were the carriers. He put calves in screened stalls of solid partitions so that they could not touch noses in such a way that flies had access to both infected and noninfected animals but keratitis was not transmitted.

Treatment.—For several years treatment was carried out only at the time the disease appeared. The use of commercial mixed bacterin gave us poor results. However, cases appearing in treated herds later were of a milder type. The affected calves were treated with large repeated doses of mixed bacterin and infected eyes with eye washes and ointments. A 2½ per cent solution of zinc sulfate seemed to rid the eye of the infection. In some herds the treatment was discouraging while excellent results were obtained in others.

In 1937, we began to try preventive rather than curative measures. In western Kentucky, keratitis usually starts in May and continues on until fall. Around the first of May we injected 21 herds with an average of 24 cows or a total of 504 cattle. They were all Jerseys except 44 which were Herefords. All cows in the 21 herds had normal eyes. They were given 5 cc. of a keratitis bacterin consisting of *Pasteurella bovisseptica* (40%), *Corynebacterium pyogenes* (20%), streptococci (20%), staphylococci albus and aureus (10% each). The results were as follows: 8 herds, negative; 4 herds (8%) infection of a mild type; 6 herds (5%) infection of the more acute type; 3 herds (3%) infected, all of mild type. In the final observation, made in the fall, 8 herds were negative and 13 herds had various percentages of infection. We

still did not obtain the immunity that the herd owners desired. Treatment of cases with the uses of large doses of bacterin and collyria of zinc sulfate was very satisfactory.

In 1938, 720 animals in 40 herds were treated from April 15 to May 1 with a bacterin consisting of *Pa. bovisseptica* (40%, *Cor. pyogenes* (20%), streptococci (20%), staphylococci albus and aureus (10% each). In the fall 23 herds were still negative, 10 herds showed infection of 6 per cent; 6 herds, 3 per cent with two acute cases and the rest mild; and 1 herd had one mild case. The infected animals were treated the same as in 1937 with large doses of mixed bacterin and local treatment. All eyes became normal except of two Herefords which developed into chronic cases that required enucleation in the fall.

In 1939, 38 herds averaging 20 head (760 cows) were treated with the newer mixed bacterin. The first injection was made about March 15 when each animal was given 5 cc. subcutaneously the first week, 10 cc. the second week and from 12½ to 15 cc. the third week, completing the treatment by the first week in April. The reason for treating them early was to give a longer time for immunity to develop and while all still have clear eyes. These herds were pastured during the summer. In July, there were several cases of keratitis in a herd on lespedeza and sweet clover. Attempts to transfer the infection failed. So, a tentative diagnosis of allergic keratitis caused by vegetable proteins and split proteins, was made. The results were: 21 herds remained clear throughout the summer; 10 herds less than 1 per cent infected; 6 herds approximately 2 per cent infected and 1 herd 25 per cent infected. Change of pasture cleared up these animals in approximately two weeks. This was undoubtedly an allergic type of the disease.

In 1940, we injected 36 herds averaging 33 head (828 cows). The injections were again made in March. The same dosage was used. These animals were all put on good lespedeza and mixed pastures. The results in the fall were: 27 herds negative throughout the summer; 6 herds 2 per cent

infected; 3 herds sold before records were complete.

This year we have made three consecutive injections of the same amount of mixed bacterin in 850 cattle. Our final observations can not be made until late in the fall but in June there was but a small percentage of keratitis.

CONCLUSIONS

From these observations on 3,662 cattle treated with doses of keratitis bacterin, we found three injections (5, 10, and 15 cc.) early in the spring before any infection has occurred gave an immunity that prevented the trouble during the summer months.

The question of what action a bacterin can have on allergy arises. Naturally one would not expect it to be effective in the allergic type, although bacterins do cause intense reactions when given to allergic animals. The reaction did no harm and the attacks were markedly milder after the first injection.

In regard to vitamin A deficiency, in February, 1940, one of my clients purchased 41 hill cattle ranging from 5 to 10 months of age. They had been raised in the hill section of Tennessee. On arrival they were given hemorrhagic septicemia serum, because of the shipping exposure. These cattle were emaciated due to wintering on dry sorghum, corn stalks and other rough feeds. Until grass, they were fed shredded fodder and other rough materials. In April, this herd had an incidence of about 70 per cent keratitis. The laboratory isolated streptococci, staphylococci and *Es. coli* from swabs sent. Attempts to transfer the infection failed. The diagnosis was nutritional keratitis resulting from avitaminosis A. It was based on the large number of animals affected, the varying degree of keratitis, and the history of feeding a ration deficient in vitamin A. In two weeks after these calves had been fed well-cured alfalfa hay, ground yellow corn, and given access to minerals their eyes cleared, except three cases of perforation of the cornea which caused permanent blindness.

It is advisable to make a thorough study

Acetonemia and Albuminuria in Dairy Cows*

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THE TITLE of this paper seems, because of of usage, to have become the term which will identify this condition in cows. It has been variously known as chronic milk fever, gastrointestinal catarrh after calving, acetonemia, ketosis, ketonuria, and acidosis. Ketosis would probably be the better name.

Udall defines it as "a postparturient disease of well-nourished mature cows characterized by marked hypoglycemia, acetonuria, and acetonemia, thought to be due to an impaired metabolism. The chief physical signs are depressed consciousness, motor irritation, paresis, rapid emaciation, and a sweetish chloroform-like odor of acetone in the breath, urine, and milk. The mortality is low." There is a marked reduction of milk flow. Reproduction may, as a result of loss of physical condition, be impaired.

It has been reported chiefly from Denmark, Holland, Sweden, England, and in Texas by Hayes in 1931. At present it would seem that the disease is more common than formerly supposed owing to the fact that it had not been recognized and reported. Many will recall that when dextrose was added to the calcium gluconate solution used in the treatment of milk fever, the results were much better, especially when an appreciable number of cases were

compared. It is my opinion that we were treating approximately as many cases of acetonemia as we were of milk fever. Our knowledge of this disease has increased to the extent that we are now able to diagnose it with a fair degree of accuracy.

In its typical form acetonemia occurs in well-nourished mature cows about eight days after calving, usually from the third calving on. However, first calf heifers and mature cows previous to or during the act of calving may be severely affected. It seems to be more prevalent during the late winter. However, cattle on pasture in the south where there is green feed at this time of the year are also attacked.

The essential cause is unknown, but it is generally believed to be a deranged carbohydrate metabolism. The ketones are products of incomplete oxidation of fatty acids. Since acetonemia occurs soon after calving it is probable that pregnancy or parturition itself is a factor.

Nervous symptoms are present in all cases, and these may be prominent. There is a gradual loss of appetite and rapid loss of condition, probably due to reduced fuel value of the fats. The liver may show an increase in size and pain on percussion, but I have not found these to be prominent symptoms. A typical case exhibits an arched back, which may be curved to the right or left, a lowered head, half-closed eyelids, and a slow and reluctant gait. The temperature is normal. Respiration, while not increased, is labored and deep with marked activity of the abdominal muscles. The heart beat is usually normal, occasionally exaggerated in tone and impulse so as to be heard a short distance away. Occasionally the jugular vein seems to be full. Earlier symptoms are fear, restlessness, nervousness, hypersensitiveness, especially along the back. The facial expression may be wild and staring. Deranged vision is frequent. There may be marked twitching

*Presented before the Section on General Practice, Annual Meeting of the AVMA, at Indianapolis, Ind., Aug. 13, 1941.

(Continued from preceding page)

of outbreaks of keratitis so as to determine the cause. The early use of keratitis bacterin appears to be a preventive rather than a curative agent. Further research on this disease seems to be essential. Although a disease costing cattle owners millions of dollars a year, it has received very little attention in the field of research.

of the muscles of the body and head. When down the animal assumes a position nearly identical with that of milk fever cases. However, the patient responds to external stimuli and is conscious of one's presence.

The appetite is perverted or lacking. Marked atony of the rumen is present. The feces are dry and shiny, usually being expelled in thickened flakes. Constipation is such a pronounced and frequent symptom in this disorder that many cases of acetoneuria have unquestionably been diagnosed and treated as indigestion. However, the usual treatment for indigestion gives no response.

Milk production is markedly decreased. The peculiar chloroform-like odor of the milk is frequently noticeable in milking and can usually be detected in the urine and the breath.

Recurrence after apparently complete recovery is not uncommon. The recurrence may be from 24 to 72 hours in severe cases. Occasionally, an animal must be treated repeatedly over a considerable time.

One case which apparently made a recovery became ill again when put on a grain ration. Treatments were repeated till she could be put on grass, and she eventually recovered. Another cow had five attacks following a like number of freshening periods. If she was treated when the first symptoms were noticed, the initial treatment seemed to be sufficient. If there was much loss of weight, two treatments were necessary. Previous to her last freshening she was fed a considerable amount of corn syrup, and during the last week dextrose was substituted. After freshening she was as severely sick as at any previous time. Three of her daughters have freshened without any signs of acetoneuria.

The course of the disease varies. Mild forms frequently recover spontaneously, some from a few hours to several days, and others suffer a protracted convalescence before they recover their former weight.

Metritis—whether it is a result of the acetoneuria or *vice versa*—is frequently present and, if accompanied by a diarrhea, generally proves fatal. Such cases appear sick for weeks.

Milk fever and acetoneuria are differentiated, in my opinion, most readily by the lack of nervous symptoms in milk fever, though both conditions may be concurrent.

The Ross test for acetone bodies in the urine is quickly and easily applied so that any guessing, as far as acetoneuria is concerned, may be readily eliminated. The reagents for this test are one part sodium nitroprusside with 100 parts ammonium sulfate and a separate solution of concentrated ammonium hydroxide. One gram of the powder mixture is dissolved in 5 cc. of urine and 2 cc. ammonia added. A permanganate color develops in a few minutes if acetone bodies are present. The degree of reaction does not signify the severity of the cases nor the percentage of acetone bodies present.

Because the Ross test has demonstrated the presence of acetone bodies in the urine it does not follow that the diagnosis should be acetoneuria alone. It may be, upon closer observation, traumatic pericarditis or gastritis, pneumonia, metritis, nephritis, or albuminuria with acetoneuria. Cases diagnosed as acetoneuria need careful watching till they are well on the way towards recovery if complications are to be avoided.

The treatment we use is to inject, intravenously, 500 cc. of 20 per cent solution of calcium gluconate and 500 cc. of a 40 per cent dextrose solution. If there is a recurrence, 1,000 cc. of the dextrose solution is injected. There is a wide margin of safety in the use of this product. We have found but few cases requiring other treatment. These are usually the severe where one tries about everything that can be and has been suggested. Recently, Fincher and Hayden¹ have done some work with anterior pituitary lobe hormones that seems to be promising. They conclude that their data are too few to substantiate any claim that these hormone preparations are specific, a few of their most marked cases recovered with no other therapy.

ALBUMINURIA

Another condition to which I would like to call your attention is albuminuria in dairy cows at parturition. Most of us admit that we have failed to recognize many

¹Cornell Veterinarian, xxx (Apr., 1940), p. 197.

of these cases. They are definitely not milk fever nor acetonemia; they do not respond to treatment. While struggling along with one of these cases last year, the cow appeared normal but could not get up. Fortunately, I read an article by Freer and Hayden in the *Cornell Veterinarian* of January, 1941, describing the very condition confronting me. Her urine was tested and her case diagnosed as albuminuria. I had considerable difficulty convincing the owner I was still in my right mind when I instructed him to feed her the whites of eggs by the dozen. She was back in the milking line in three days, whereas her illness would have been protracted and the outcome doubtful had we not given this treatment.

Cows so affected appear attentive and eat and drink about the usual amount. The only observable symptom is their inability to get up. They constantly push with their legs, especially the hind legs, as though they were shoving something away from them. This and the presence of albumin and, generally, sugar in the urine are the basis for the diagnosis.

A sufficient amount of urine is collected so that qualitative and quantitative tests for acetonemia, albuminuria, and occasionally for sugar may be performed. If suspicious of nephritis, the urine is examined microscopically for casts. These diseases of well-bred, high-producing cows at or near the time of parturition offer a challenge to one's diagnostic ability that cannot be passed over lightly.

As already inferred, when there is an outflow of albumin in the urine it must be replaced, and egg whites are used as they, together with skim milk, are the most readily available source of albumen. Cows seem to take them readily. Favorable results will not be apparent for several days, when the cow either gets up by herself or with a little aid. The replacement of albumin should be continued until it no longer appears in the urine. In the treatment of relapses more difficulty is experienced.

It is very dubious if the amount of albumin contained in the several dozen egg

whites given these animals sufficiently replaces that given off in the urine. In all probability there is some other factor involved in this procedure of which we are not aware.

Albuminuria cases are frequent but proved rather difficult, especially from the owner's standpoint. They have been accustomed to having cows get right back on their feet and come to production, apparently not being aware that there are other diseases besides milk fever affecting a cow at this time.

The solution of these problems will require the joint efforts of the chemist, physiologist, dairy husbandryman, and practitioner.

Sister Kenny's Treatment for Poliomyelitis

Sister Elizabeth Kenny of Australia ("sister" because district nurses are so-called in Australia), proved in the bush country that the free use of hot water packs along with massage modifies the pain and muscular spasms of infantile paralysis. The relief is real, and pronounced, published reports indicate. Her method was condemned by the Australian commission and was high-hatted in London, recalling the treatment of Louis Pasteur in the hands of French scientists in the 1880s.

On money granted by the National Foundation for Infantile Paralysis (President Roosevelt's birthday ceremonies), Miss Kenny came to the United States and was permitted to demonstrate her treatment at the University of Minnesota. The Mayo's watched with their far-seeing practical eyes. The amelioration of "polio" victims from the treatment was recognized and additional recognition came from the *Journal of the American Medical Association* when it pointed out editorially that massage and movement, in lieu of rest in splints, is indicated. Rest adds to the crippling effects of the paralysis.

"Serum" is the most commonly misused medical term in the secular literature.

Paratyphoid in Baby Wood Ducks*

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ALTHOUGH PARATYPHOID has often been described in domestic ducks (Clarenburg,¹ Edwards²), little is known of the occurrence of the disease in wild ducks. J. E. Schillinger states (*in litt.*) that a few years ago he and Mrs. P. W. Wetmore isolated an organism very similar to, if not identical with, *Salmonella typhimurium* from wood ducks raised on a game farm in Maryland, but their findings were not published. The purpose of this note is to report an outbreak of paratyphoid among wood ducks (*Aix sponsa*) which came to the attention of the Illinois Agricultural Experiment Station.

On June 12, 1941, ten dead wood ducks about a week old were brought to the laboratory for diagnosis from a waterfowl research station in northern Illinois.‡ The eggs had been obtained from wild birds on the Illinois River by the use of nesting boxes, and had been hatched in a new incubator which had never been used before. About 94 per cent of the eggs hatched. After hatching, the ducklings were placed in pens which had been disinfected with a commercial liquid disinfectant. New electric hover brooders were used, and the cement floors of the pens were covered with about an inch of fresh sand. The birds were fed a well-balanced diet regarded as satisfactory for wild ducklings.

The symptoms, appearing about a week after hatching, consisted of loss of appetite, sluggishness, and drooping tails. The

affected ducklings died usually one day after symptoms were first observed. In all, about 400 out of 500 ducklings died.

At autopsy, pasted vents and white diarrhea were observed. Brownish unabsorbed yolks were present in two of the ten dead birds, the ceca of three ducklings contained solid caseous cores, and the intestines of some of the birds were slightly inflamed. No other gross lesions were found.

The heart blood and livers of a number of the ducklings were cultured on blood agar and MacConkey's agar plates. *Salmonella* was isolated on both media from the livers, but not from the heart blood. A transfer was sent to Dr. P. R. Edwards, University of Kentucky, and identified by him as *Salmonella typhimurium*.

Since it was desired to retain some of the survivors for breeding purposes, it was considered advisable to determine if surviving or exposed birds might be carriers of the organism, and if so, to cull such birds. Relatively little is known of methods which can be used with success for the recognition of carrier ducks. The agglutination test has been used in domestic ducks (Hole,³ and Warrack and Dalling⁴), and its possible value is suggested by the results obtained in pullorum disease of chickens and turkeys. However, the rapid whole blood test, so successful in the diagnosis of pullorum disease in chickens, is not as satisfactory in turkeys. Hinshaw, Jones, Harr and Niemeyer,⁵ found that the tube test was much better in these birds. This finding has been confirmed at the Illinois station but preliminary studies on pullorum

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†Assigned by the Illinois State Department of Agriculture to the Animal Pathology and Hygiene Laboratory to assist in diagnosis and research.

‡The Specimens and information regarding the history of the losses were furnished by Lyle Sows and William Elder, assistant game technicians of the Illinois Natural History Survey.

¹Clarenburg, A. Paratyphoid in ducks in relation to public health. Proc. 7th World's Poultry Congr. Cleveland, 1939. pp. 233-236.

²Edwards, P. R. Incidence of *Salmonella* types in fowls in the United States. Proc. 7th World's Poultry Congr., Cleveland, 1939. pp. 271-274.

³Hole, N. *Salmonella* infections in ducklings. Jour. Comp. Path. Therap. xlv (1932), pp. 161-171.

⁴Warrack, G. H. and T. Dalling. 1933. *Salmonella* infections in young ducklings and duck's eggs. Vet. Jour. xxix (1933), pp. 483-487.

⁵Hinshaw, W. R., E. E. Jones, J. F. Harr and W. E. Niemeyer. Comparison of the tube and the whole blood tests for pullorum disease of turkeys. Cornell Vet. xxx (1940), pp. 30-38.

testing in turkeys (unpublished) have indicated that the rapid serum test may be more sensitive than either of the other two agglutination tests. Hence it was decided to use both the tube test and the rapid serum test in an attempt to detect carriers of *S. typhimurium* in wood ducks.

On the other hand, Wanner⁶ considers that fecal culture is a better method of detecting carrier ducks than the agglutination test. Therefore, fecal cultures were also made.

On July 26, fecal samples were collected from 16 surviving, apparently healthy wood ducks. They were cultured in tetrathionate broth and plated out on MacConkey's agar. White colonies were picked to Russell's double sugar agar slants. Those colonies which after 24 hours showed the Salmonella reaction (acid and gas in the butt, alkaline slant) were inoculated into dextrose, lactose, maltose, sucrose and tryptone (for the indol test) broths. Production of acid and gas, in dextrose and maltose but not in lactose or sucrose and failure to produce indol, were used as criteria for placing the organisms in the genus *Salmonella*. By this means, *Salmonella* strains were isolated from the feces of three of the 16 wood duck fecal samples. Two were identified by Dr. Edwards as *S. typhimurium*, and one as *S. bredeney*.

Still later (Sept. 18), fecal samples were obtained from 11 of the survivors, and blood samples from 18. Fecal cultures made as above were negative to *Salmonella*, while rapid plate and tube agglutination tests with the blood serums were negative in a dilution of 1:25.

An attempt was made to determine the source of the infection. The high percentage of eggs which hatched (94%), and the fact that losses did not appear until about a week after hatching, suggested that the eggs probably did not harbor *Salmonella*.

Many other birds were present on the preserve, including about 300 Canada

geese, 15 geese of other species, 100 chickens, 50 pheasants of nine species, 20 peafowl of three species, 200 other ducks of eight species, 15 swans of four species, 20 doves of two species, 1 crow, and 2 cranes of two species. Altho similar losses had not occurred on the premises before, the possibility that some of these birds might be carriers was considered.

Fecal samples were obtained from 5 mallards and 3 Canada geese, and blood samples from 9 mallards and 14 Canada geese. Fecal cultures were made as described above, and *S. typhimurium* was isolated from 1 mallard. Both tube and rapid plate agglutination tests were carried out in a dilution of 1:25 with the birds' sera. All were negative to the tube test, but with the rapid serum test a positive reaction was obtained in the mallard from which *Salmonella* was isolated.

Although only a small number of birds were examined, the presence of *S. typhimurium* in the feces of one healthy adult mallard suggests that possibly other healthy appearing mallards, or other species of birds on the premises, were potential carriers. A carrier feature in any host also implies premise contamination which may be transferred on the feet of attendants or mechanically in some other way to pens housing ducklings.

SUMMARY

An outbreak of paratyphoid associated with *Salmonella typhimurium* which caused the death of 400 out of 500 week-old wood ducks (*Aix sponsa*) is described. The organism was isolated from a healthy adult mallard on the premises, and it is possible that the infection may have followed premise contamination by adult carriers.

If the whimperings (in the newspapers) over the inconveniences brought about by the war may be taken as a criterion, there will be a lot of loud screaming when things get tough—when overcoats are worn in the living room and the wife has to stand in line all morning with tickets for food that does not exist.

⁶Wanner, A. Beiträge zur Breslauinfektion der Enten. Zeit. Infektskr. Haustiere III (1937), pp. 128-162.

An Outbreak of Listerellosis in Oregon Sheep*

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PREVIOUS REPORTS of the occurrence of listerellosis in sheep have been limited to the central and eastern states. Although no organism was isolated, a disease of sheep simulating Listerellosis was first reported by Doyle¹ in Indiana. Following this, Jungherr² in Connecticut, Olafson³ in New York, Morin⁴; Graham, Dunlap and Bradley⁵; Henderson⁶; Jensen and Gay⁷ in Illinois, and Biester and Schwarte⁸ in Iowa reported the infection in sheep. In two instances^{4, 8} it was reported that "western" lambs were affected. The origin of the animals was not stated. The purpose of this article is to report the finding of listeriosis in Oregon sheep.

Although previous cases in sheep showing symptoms suggestive of *Listerella* infection have been called to the attention of this department, only recently has there been an opportunity to examine a case in the laboratory.

This outbreak involved at least eight in a band of 3,000 ewe lambs on cut-over land in western Oregon. Animals affected exhibited typical circling symptoms and other

evidence of encephalitis such as apparent blindness and standing with their heads against objects. Autopsy revealed no gross lesions except possible slight congestion and oedema of the brain. A differential leucocytic count was as follows: eosinophils (0%), basophils (0%), myelocytes (0%), juveniles (2%), stabs (2%), polymorphs (44%), lymphocytes (47%), monocytes (5%).

MORPHOLOGICAL AND CULTURAL CHARACTERISTICS

Seeding of portions of the brain stem on heart infusion sheep-serum agar yielded an apparently pure culture of organisms. When grown on this medium for 24 hours at 37 C., round, convex, smooth, glistening, milky-white colonies up to 1 mm. in diameter were produced. Microscopic examination revealed a gram-positive rod of about 2.5 by 0.5 u. After six hours' growth in plain nutrient broth, characteristic limited, tumbling motility was observed in hanging drop preparations.

Acid, but not gas, was produced in dextrose, levulose, maltose, and salicin. After 72 hours there was slight acid production in galactose, glycerol, and lactose. There was no acid production in inulin, mannitol, or sucrose. In semi-solid medium consisting of agar (0.25%), gelatin (8.0%), dextrose (1%), growth followed the stab in twelve hours, succeeded by irregular colony formations extending a short distance into the medium.

PATHOGENICITY

Saline suspension of the brain stem was injected intraperitoneally into one mouse and one guinea pig in 0.1 cc. amounts. The guinea pig was dead on the fifteenth and the mouse on the nineteenth day. No attempt was made to recover the organism.

*Published as technical paper No. 396, with the approval of the Director of the Oregon State Agricultural Experiment Station. Contribution from the Department of Veterinary Medicine.

¹Doyle, L. P. Encephalitis in Sheep. J.A.V.M.A., lxxxI (1932), pp. 118-120.

²Jungherr, Erwin. Ovine Encephalomyelitis Associated with *Listerella* Infection. J.A.V.M.A., lxcI (1937), pp. 73-87.

³Olafson, P. *Listerella* Encephalitis (Circling Disease) of Sheep, Cattle and Goats. Cornell Vet., xxx (1940), pp. 141-150.

⁴Morin, L. N. Studies of a Malady in Sheep. J.A.V.M.A., lxcIII (1938), p. 32.

⁵Graham, R., Dunlap, G. L., and Brandly, C. A. Ovine and Bovine Listerellosis in Illinois. Science xxxvIII (1938), pp. 171-172.

⁶Henderson, J. A. An Outbreak of Listeriosis in Sheep. North Am. Vet. xxII (1941), pp. 545-546.

⁷Jensen, G. W., and Gay, W. J. Ovine Listerellosis. Report of an Outbreak in a Purebred Flock. Ibid., pp. 601-605.

⁸Biester, H. E., and Schwarte, L. H. Studies on *Listerella* Infection in Sheep. J. Infect. Dis. lxcvi (1939), pp. 135-144.

Two guinea pigs and four mice were injected intraperitoneally with 0.1 cc. saline suspension prepared from a twenty-four-hour serum agar culture. The guinea pigs died in 24 and 96 hours. The first guinea pig to die yielded pure cultures of the organism from liver, spleen, and heart blood. The other was not examined. Two of the injected mice died within 48 hours. No attempt was made to isolate the organism. The two remaining mice survived. A rabbit was injected intraperitoneally with 0.5 cc. saline suspension prepared from a 24-hour serum agar culture. A differential blood-cell count made 20 days later showed only slight evidence of monocytosis. A similar suspension was instilled into the left eye of a rabbit. Three days later there was slight conjunctivitis. This subsided on the fourth and fifth days.

Since Julianelle⁹ reports simple instillation not always effective, a second attempt was made by gently massaging the conjunctiva of a rabbit with a cotton swab previously dipped in an 18-hour broth culture. This resulted in an extensive purulent conjunctivitis, which completely closed the eyelids in 72 hours.

Two lambs were injected intracerebrally with one cc. each of a saline suspension prepared from a 24-hour serum agar slant. Another lamb, used as a check, was injected in a similar manner with 1 cc. of an NaCl solution (0.85%). Twenty-four hours later the lambs receiving the suspension of organisms had temperatures of 105.4 and 106.4 F., appeared to be in a partial coma, refused feed and water, and preferred to lie. The check lamb's temperature was 103.5 F. and it appeared normal. The following night both lambs receiving the culture died. The organism was recovered from the brains of both animals.

MICROSCOPIC PATHOLOGY

Examination of eosin-hematoxylin stained sections from the brains of the two lambs dead from experimental infection revealed



Conjunctivitis 72 hours after inoculation.

a leucocytic infiltration of the pia mater and perivascular areas.

SUMMARY

Listerella monocytogenes has been isolated from the brain of Oregon lambs.

Cowboys Learn to Milk

A large-scale beef and dairy enterprise is to be set up by 45 Nevada farmers, on ranch land purchased by an association with funds loaned by the Department of Agriculture.

The project will develop a 10,500-acre tract, formerly the Rodgers Ranch, on Humboldt River in Pershing County. The property has one of the oldest water rights in Nevada, and carries a range right under the Taylor grazing act.

Beef, dairy, and sheep enterprises, with some hogs and poultry, will be the main activities, according to the Farm Security Administration. FSA will make loans to individual farmers to buy good livestock for breeding. Under present plans, the association will buy the land and lease it to individual members. Rentals are expected ultimately to amortize the association's loan from the Government. A farm manager will supervise the project.

The corn-raising area of Russia comprises about 37,000,000 hectares (92,000,000 acres). Where hybridization was practiced the yield was increased 41 to 51 per cent.—*From International Review of Agriculture, Sept. 1941, Rome, Italy, p. 295 T.*

⁹Julianelle, L. A. Biological and Immunological Studies of *Listerella*. J. Bact., xlv (1941), pp. 367-383.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Diseases of the Newborn in the Equine Species*

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THE PREVALENCE of diseases affecting the newborn of the equine species constitutes a formidable obstacle to successful horse breeding. Some of the conditions responsible for the losses are fairly well understood in veterinary science. Others of them, however, are not as clear, and, as a result, the mortality remains high.

To facilitate an orderly presentation of these affections, they will be dealt with in the following groups; avitaminoses, congenital infections, foal septicemia, umbilical infection, persistent urachus and septic of pyemic arthritis—joint-ill. It is logical that the aforementioned conditions should be given collective consideration for some of them have definite relationships to each other, and, furthermore, they involve prenatal influences which have their origin during pregnancy.

THE AVITAMINOSSES

Not too much is known about the parts which the various vitamins play in reproduction, but since we are aware of the facts that some of them are essential to normal growth and development, both before and after birth, others of them are essential to the maintenance of health and vigor and others of them are essential to reproduction, one can realize what occurs when certain vitamins are lacking.

Vitamin A.—It is known that pregnant animals, suffering for the need of vitamin

A, give birth to still-born fetuses, to others which are blind, and others which are weak and sick and apparently very susceptible to infection. This vitamin prevents xerophthalmia and is known also as the anti-infective vitamin. The latter action is essential to the integrity of the epithelial tissue of the digestive, respiratory and urinary tracts. Thus, the mucous membranes lining these open tracts become vulnerable to various pathogenic organisms deadly to the newly-born foal. Such cases might be looked upon as foal septicemia, but in reality, there is a combination of events leading to the sepsis. Information regarding the manifestations of this avitaminosis during pregnancy in so far as the newborn are concerned is relatively new, but any veterinarian who has had much to do with equine practice will recall cases in newly-born foals that were blind, foals weak and stupid lacking strength and vigor, and in some instances unable to rise; and foals highly susceptible to infection which succumbed quickly to sepsis.

Somewhat similar troubles have been attributed to avitaminosis B, during pregnancy. Foals affected present symptoms of coma and somnolence. They are unable to stand and nurse. The pulse is fast and temperature normal or subnormal. Recovery in certain of these cases can be accomplished by the administration of thiamin, intramuscularly.

Vitamin D.—The antirachitic factor is considered of greater importance in post-natal life. In a general way, it may be said that hereditary and congenital evolution of

*Presented before the Section on General Practice, AVMA, Indianapolis, Indiana, August 13, 1941.

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rachitis has not been proven even where there is nutritional deficiency of the dam. However, while the mother's economy is inadequately supplied with vitamin D, the developing fetus lives in a condition of latent rachitis. Holding no appreciable vitamin D reserves, the foal falls prey to rachitis on the least provocation. Therefore, prophylaxis begins with the mother during pregnancy, but a sufficient provision of the necessary vitamin after birth is more important. Furthermore, it may not be wise to assume that a lack of bone development and skeletal deformity as a result of lack of vitamin D during pregnancy does not occur, for, any veterinarian experienced in obstetrical work in horses will remember cases in which just such manifestations were observed. The long pregnancy period of mares is a factor also in creating a greater need for vitamin D.

Vitamin E.—The anti-sterility factor is probably not important in so far as diseases of the newborn are concerned, but since vitamin E plays such an important rôle in reproduction in both sexes, it is not beyond the realm of a possibility that the vitality and vigor of the newborn may be greatly lowered in borderline cases of an avitaminoses E.

CONGENITAL INFECTIONS

There is ample evidence that foals become infected during intrauterine life. The occasions upon which it occurs are those in which no attention is given to sex hygiene at the time of breeding, early breeding in a recently parturient mare which retained her afterbirth and had parturient difficulties. Recently, a report by Capt. Wm. E. Jennings of the Veterinary Corps, U. S. Army at Front Royal, Virginia, indicates that ninth day breeding after parturition is more frequently followed by failure to conceive, abortion, dead and diseased foals at birth and retention of the afterbirth, than breeding at subsequent periods of estrum.

Foals which are stillborn, retention of the afterbirth and foals which develop sepsis immediately following birth, all indicate intrauterine infection. It is remarkable,

however, that intrauterine infections which are capable of causing such serious disease in the foal and its appendages quite often do not seriously affect the health of the dam. Such phenomena reveal the protective powers of the endometrium, but it should be remembered also that it is possible to err and that some of the cases such as stillbirth and sepsis early may be primarily attributable to avitaminoses or nutritional deficiencies during intrauterine life. The finding of a microorganism in a recently-aborted fetus or in the retained placenta or from uterine discharges does not alter the fact that other factors may have been equally, and perhaps primarily more important than the infective agent. In my opinion, we are altogether too prone to accept the findings of a bacteriologist as being conclusive and completely authoritative. Whereas, in reality, such findings should be looked upon only as one link in the chain of evidence available for diagnosis.

The organisms responsible for intrauterine infection are the same as those found in navel-ill in foals; namely, streptococci, *B. viscosum equi* (*B. nephritis-equi*, *Shigella equirulis*) and *B. coli*. The *B. abortivo-equinus* also causes intrauterine infection.

In veterinary literature, the terms, navel-ill and joint-ill, have been used to designate both septicemias of the newborn and joint-ill. This has been done regardless of the time at which the disease appeared or its character. It would seem preferable to refer to those cases which appear at birth or within a few days after birth and which are definitely septicemic in character as foal septicemia and, on the other hand, those which make their appearance at a later date, are definitely arthritic in character and protracted in their course as joint-ill.

Foal Septicemia.—This is an acute septic condition which may be apparent at birth or develops very early in post natal life. The foal is profoundly affected and usually succumbs within a few days after the onset of the disease. These early septic cases are more often caused by the *Sh. equirulis* or-

ganism, less frequently by streptococci and the *B. coli*.

There are various manifestations of the condition, all of which are quite marked in character. The mucous membranes are diffusely injected; there is marked prostration and weakness. In some, I have observed umbilical discharges of bloody urine. The latter indicating a violent nephritic inflammation. Foals which were apparently born normal develop a high temperature, while those in which the disease is apparent at birth may not have fever. Probably one of the most striking evidences that such conditions have had this origin from an intrauterine infection is that lesions quite similar in character may be found in still-born foals, those that were moribund at birth and those that developed the condition subsequent to birth. Furthermore, bacteriological examination and culture will reveal similar organisms. The only difference lies in the time and the place that the disease occurred. Recognizing of the condition depends upon the time of its occurrence (at or soon after birth), the prostration, the weakness, and the debility. Here, one should point out that cases which are moribund at birth or are stillborn might be cases of the avitaminoses previously mentioned. There may not be any difference in the clinical aspect nor even in the presence of pathogenic organisms but that does not necessarily exclude avitaminoses.

The treatment of foal septicemia though seldom successful consists of careful nourishing, the administration of the dam's blood, antiserums, and sulfanilamide.

Umbilical Infection.—This should be dealt with as an entity whether the organisms gained entrance before birth or subsequently, for who among equine practitioners has not met with cases where the umbilicus was involved in an infectious process which remained localized? It is true that an infected umbilicus should always be regarded as serious for the likelihood and the possibility of dangerous sequels is great. Such conditions as a periviscerous urachus with the leakage of urine,

navel-ill and metastatic abscesses are all too common as a result of an infected umbilicus.

The infected umbilicus without systemic complications is usually first seen about the time the dried stump of the umbilical cord is ready to drop off, but in some instances, a little earlier. The tissues around the aperture are swollen, in some cases quite tumefied, in others, not as marked. Invariably, if the dried remnant of the cord has dropped off there is a pus discharge, if not, pus may have broken through at the side, close to the abdomen. There is no systemic reaction, and if horse breeders would have it attended to at that time, many cases of navel-ill would be prevented. However, the foal is not sick and in the minds of most laymen does not require attention.

Treatment.—When called upon to deal with the condition, one should lay the foal down, irrigate the pus tract with hydrogen peroxide (50%) carrying it well down into the opening with a blunted hypodermic needle, not less than two inches long. Complete the treatment by injecting a little iodized mineral oil into the tract. It is advisable also to inject a prophylactic dose of anti-navel-ill serum. If there is much tumefaction around the umbilical aperture, the topical application of a nonirritating iodine ointment should be supplied to be used daily. It is advisable to visit such cases daily until the purulent discharge has been stopped.

Persistent Urachus.—This condition is recognized by the seepage or dribbling of urine through the umbilical aperture. Most cases of it develop as the result of umbilical infection, and it occurs more frequently in male foals. The seepage is most frequently observed at the time the foal completes the act of micturition. A few drops or a small stream of urine flow from the umbilical aperture. The owner is always alarmed at this unusual occurrence and usually obtains skilled aid at once.

Treatment.—Formerly, many veterinarians used a ligature around the umbilical stump to correct this condition, but at the present time, such a radical step is not

often used. The danger of enclosing infective agents and having more serious sequels such as navel-ill has taught that it is wiser to irrigate with antiseptics and apply astringents. Here again, the use of prophylactic doses of anti-navel-ill serum should not be overlooked.

It is of interest to note that quite often male foals that develop an infected umbilicus or a persistent urachus do not protrude the free extremity of the penis from the sheath. This result in the voiding of urine in the sheath and causes irritation around the umbilicus. The skin becomes inflamed and the hair matted. This is a very unhealthy condition and lends itself to the infection of the umbilicus. It has been my custom in that case to grasp the glans penis and forcibly pull the penis out through the orifice of the sheath. Thereafter, as a rule, the organ is extruded for micturition and the inflamed area heals.

NAVEL-ILL, SEPTIC OR PYEMIC ARTHRITIS

This disease is so well known that it seems almost superfluous to write about it. However, in the light of present day knowledge, there may be some wisdom in enlarging our views on the etiological factors. In the preceding reference to foal septicemia, mention was made of the pathogenic organisms which are found in such cases and that these same organisms are those found in navel-ill cases. Should not the avitaminoses, nutritional deficiencies, iodine insufficiency and other factors which have to do with the health and well-being of the pregnant mother be given at least an equal amount of consideration as the infective agents? It should be remembered that the health, vigor, vitality, and disease-resisting powers of the mother are reflected in her offspring. We know that as a result of certain avitaminoses, young are born weak and more susceptible to infection, that iodine insufficiency in the dam results in congenital goiter and a deranged metabolism of the developing fetus and that such young are also more susceptible to infection. We know that calcium and phosphorus imbalances and extreme parasitism in the pregnant dam influence detrimentally the

growth and vigor of the fetus. Quite often such conditions do not visibly or obviously manifest themselves in the mother, but are seen in the newborn. That these latter contributory factors abound can be readily understood for at the present time mares in foal are often grossly neglected in feeding and care. There was a time when the horse was the premier animal on the farm. Except in rare instances, they no longer occupy that position with the result that they no longer receive the attention formerly given them.

The symptoms are, first, a fever followed by lassitude. Owners notice that the foal has lost its playfulness and that the mare is not being sucked out. As a rule, however, no attention is given the case until lameness is manifested. Then it is often felt that the colt has been injured by the mare stepping on it or in some such manner. During this time, the affected animal becomes more feverish, more reluctant about moving and may ultimately have difficulty in rising. The arthritis is very painful, the foal scarcely using the affected limb at all. Other joints may become involved until finally the patient is in a state of exhaustion. The younger they are, the more quickly they succumb and the older they are, the more protracted course the disease runs. It is surprising too that as long as they continue to nurse, they usually continue to live. The affected articulations swell, are exceedingly painful and in some instances, ultimately break down and discharge a purulent exudate.

The treatment of navel-ill has never been attended with any great success, and if for no other reason, our efforts should be directed toward its prevention. Because the foregoing contributory factors play an important part in its occurrence, it follows that they should be given due consideration in prophylaxis.

Treatment should be applied as early in the case as possible and consists of the use of the dam's blood citrated and given intravenously. This form of treatment has great stimulative properties and may provide antibodies also. As much as 500 cc.

may be given. Anti-navel-ill serum in large doses and sulfanilamide should be administered as early as possible. The dose recommended is one grain, per pound of body weight per day, and its use should be pushed to obtain the maximum effect. Other symptomatic treatment may be applied as is thought necessary. The umbilicus may require attention. Once the affected articulations have reached the suppurative stage, little of ultimate value can be done.

The selection of sexually sound and healthy parents for breeding purposes, and the proper management and care of the pregnant mare throughout the gestation period, are imperative. This involves an adequate amount of exercise, grooming, and a diet sufficiently varied in character to meet with the demands of the developing fetus. Such steps as giving iodized salt, vitamins, and the mineral content of the food provided should get careful consideration.

Give navel-ill bacterin to the pregnant mare in three consecutive doses commencing about midterm, the last one about the tenth month of gestation. During the latter stages of the pregnancy period, it is advisable also to reduce bulk foods in the diet and endeavor to make it more laxative in character. Provide a clean maternity stall, and soon after the foal is born, the umbilicus should be attended to by the application of an astringent antiseptic—avoid irritants.

Anti-navel-ill serum may be given at birth as an immediate prophylactic measure, and later this may be followed with navel-ill bacterin, if thought necessary.

Dystocia in a Large Jersey: Sjoberg's Technic

"Bring all your instruments, it's going to be a tough job," the owner said in calling for professional help when a favorite Jersey was in trouble trying to deliver her third or fourth calf. The cow was ending a gestation of 284 days. A glance showed sinking of the croup and considerable relaxation of the sacro-sciatic ligaments.

Examination revealed a genital path well lubricated with fetal fluids and a fetus in anterior sterno-lumbar position. Everything was anterior to the brim of the pelvis and the fetus was on its back and its forelimbs were flexed at the carpi with the knees pointing upward. The head was reflected slightly backward and to the right. The fetus was very much alive.

Recalling Sjoberg's technic described in *Veterinary Obstetrics* by F. Benesch for exciting reflex movements in such fetuses with the object of making them roll into the proper position for delivery, the method was successfully carried out. Benesch's book says: "In anterior presentations when the fetus is living, its two orbits are grasped forceps-like with the thumb and middle finger and firm and equal pressure is made on the eyeballs for several minutes. The hand is then withdrawn and results watched for 5 to 10 minutes. In this case active movements were observed on the mother's right flank. Examination now showed that the fetus had actually rotated on its long axis, assuming a lateral or semi-dorso-sacral position. Contrary to Benesch's recommendation, repetition of the ocular pressure made no further impression on the fetus. It was, however, easy to rotate the fetus by hand into favorable position for delivery with obstetrical chain around the head and fore legs. The mother and offspring got along fine and there was no injury to the eyes of the fetus on account of the pressure.

The owner wanted to know by what magic touch a calf can be induced to turn over.

Excitation of fetal movements by pressing upon the eyeballs, recommended by Sjoberg and cited by Benesch seems to be a stunt worth considering under the circumstances related.—*Chas. Haasjes, Shelby, Mich.*

Only men of vision who understand the world conditions of the past 25 years should project their ideas into the country's critical situation. Only men who roll up their sleeves and look for a chin amount to much now. Its time to cut the chatter.

Chloroform Anesthesia in Large Animals With Special Reference to Castrations*

A. E. DOWNS, D.V.M.

Mt. Sterling, Ohio

MY ENTIRE professional career in general practice has been spent with large animals. In this highly specialized branch of veterinary science there have been many valuable contributions made during the past 25 or 30 years. But with all the remarkable progress that has come about in this field, veterinarians are not content with present conditions. On the other hand, they are constantly seeking new and better methods—methods that will make our service worth more to a highly appreciative public; methods that will make the daily task of the practitioner easier; methods that are more fully becoming to the veterinarian of today; methods that will cause the public to recognize the high ideals for which the profession stands.

We have cast aside many time-worn methods to accept new and better ones, and it is my opinion that the young veterinarian, entering the profession as a general practitioner today if he applies himself diligently and continuously to be a student of veterinary science, should have a much easier path to travel than we older men who have been practicing 25 or 30 years.

In 1926, Professor Benesch, of Vienna, introduced into this country the use of epidural anesthesia as an aid to obstetrical practice in the cow and mare. I thought that this was really remarkable and I well remember beginning its use after Lexington meeting of the AVMA in August, 1926. Having practiced for more than a decade at that time, and using what then were standard methods, I certainly fully appreciated the great contribution made by Professor Benesch and have used it regularly ever since in obstetrical practice, especially in the cow. If I had gained nothing

more from my membership I consider I would have been well repaid.

In general, the use of anesthesia has been constantly on the increase in general practice for 15 or 20 years and its more general use in some of our very painful operations has always been clearly indicated. Of this I was well convinced even before the developing of a satisfactory method of administration. First, I developed a practical method for use in swine, which was demonstrated for the first time at the AVMA clinic in Columbus, in 1936, and later at the University of Minnesota, in January 1938. This method has come into quite general use by practitioners who have mastered the technic in swine.

ANESTHESIA IN HORSES

In many other cases, especially in the solipeds, the use of general anesthesia has been neglected for certain reasons, probably the most important one being that there has not been a real practical method offered to the profession for its administration. I shall try to describe a method that I have used for years, on hundreds of horses.

First, it is absolutely essential to restrain the animal securely. In some cases, this is the major problem, as in the case of an untrained animal, such as a yearling or 2-year-old, or even a 3-year-old, that has never been haltered. Once the animal is secured with a suitable head halter, made of strong rope the next step consists of applying the mask for inhalation of the anesthetic. It is of great importance that this mask be of coarse material, such as burlap, which will admit sufficient air. The mask is laid across the nose about where the nosepiece of the halter crosses to the cheek pieces. The corners of the mask are tucked in under the cheek pieces just back

*Read before the Section on General Practice, A.V.M.A., Indianapolis, Indiana, August 13, 1941, under the title of "Anesthesia in Large Animals."

of where the nose piece is attached. This holds the upper part of the mask in position.

Next, the flaps or side pieces of the mask are brought together snugly under the lower jaw and carefully folded around the halter shank. Then a rope is poked under the cheek piece of the halter and wound around the muzzle once and fastened. This is to hold the front part of the mask around the muzzle. The rope is carried back behind the animal and one or two men instructed to pull on it when the drug is placed on the mask.

Generally the administration of the anesthetic is quickly followed by considerable excitement and the animal frequently pulls back hard. This is where a strong halter is important. Likewise, the halter shank should not be tied fast to any object, as it is desirable to give some rope in case the animal throws itself, which sometimes happens.

So, I generally just take a hitch or two around a solid object, carry the halter shank back to some secure position and have a man control it from that angle, according to my directions. This applies to animals that are strong and could not be well controlled by hitching only.

THE ANESTHETIC

Then we are ready for the anesthetic. I use purified chloroform which is placed on the uppermost portion of the mask covering the muzzle. The amount used depends largely on the size of the animal and climatic conditions. In warm, windy weather, it will take more, especially if one is working outdoors as the wind carries considerable of the vapor away.

For convenience of illustration, we will select a yearling, draft colt that is to be castrated, one weighing around 800 or 900 pounds, and secured in a box stall inside of a barn. I would pour on one ounce of chloroform as quickly as it is possible to pour it from a quarterpound bottle. In many cases, this amount will put the animal down before surgical anesthesia is obtained.

However, one is well on the way to that stage.

As soon as the animal is in the recumbent position, I observe the respiration, the eye reflex, and other details and generally give about one ounce more of chloroform *sprinkled* over the front of the mask in the region of the nostrils. I do *not* pour on this second amount, as was done the first time. While the second application of chloroform is being made, one of the farm laborers or my assistant applies a rope around the fetlock of the uppermost hind leg, carries it between the front legs, and under neck, up over the withers and back down around the fetlock again. This is to pull the leg up out of the way and the field of operation. This rope is the only one used and its only purpose, as stated before, is to place the animal in a favorable position for castration and as a safeguard in case the animal should regain enough consciousness to kick a bit.

OPERATION

The operation is carried out as usual and, upon amputating the spermatic cord of the first testicle, if no evidence of sensation is shown, the anesthetic is discontinued, that is, the mask is removed entirely, as the other cord can be so quickly severed that there is no necessity for continuing the anesthetic.

The incisions are then enlarged to provide ample drainage and the entire inside of the cavity is covered with an antiseptic dressing powder. This, in my opinion, is good practice, because it protects the operative wounds and prevents the edges of the incisions from uniting too quickly.

Immediately after completing the operation and applying the dressing, the rope is removed from the foot and the subject is not molested in any way for three to five minutes. If, by this time, the colt has not already raised himself to a natural position, some assistance is given by raising the head and lifting on the withers enough to encourage the animal to get into a natural position. By this time many arise to a standing position, but they are not urged

to do so, because if they are given sufficient time to recover completely, they stand much better than when they get up too soon. However, an animal seldom falls if it gets up as soon as the rope is removed from the foot.

The aftercare is generally of little consequence. Most all animals are given free access to feedlot or pasture. Weather conditions, in my experience, have had no unfavorable effect, but it is well to protect them from stormy weather.

Following operations other than straight castration, such as scrotal hernias and cryptorchids patients are given some additional care as conditions indicate.

USE IN MARES AND COWS

This same method of administration may be used in the adult mare and cow during difficult parturition, where absolute control of the animal is essential. I have used general anesthesia on a very large number of mares in difficult cases of dystocia and feel certain that delicate was greatly simplified and in some cases a successful come was due to the fact that the animal was anesthetized during the operation.

I have found it very useful also in extraordinarily wild and excitable cows. It may take some time and resourcefulness to get the mask adjusted, but once this is accomplished, you soon have the patient under control, and it is a very good plan to hogtie a mare or a cow while she is under control. Then, during the operation, you can use the anesthetic as indicated, without any danger of the animal regaining her feet and with the assurance that you can go ahead with delivery with a minimum of interference.

At this stage of the operation, one can conveniently switch to epidural anesthesia to control labor. If this proves satisfactory in controlling the animal as well as labor, the operation can be completed by using that technic. If the patient begins resisting and is nervous and excitable, I again resort to general anesthesia for complete control until the operation has been completed.

Many such cases are difficult to handle,

even with anesthesia, but with good instruments and good technic a majority of them can be saved.

To summarize briefly:—1. Secure your animal with a halter that you are certain it cannot break and in a place where you can safely administer the drug.

2. Always use a coarse material like bur-lap for a mask in large animals and adjust it so that you are certain it will stay in place during the period of excitement. It is just as important to adjust it so that it can be quickly and easily removed by anyone you may direct to do so.

3. From the very beginning keep in mind that you are dealing with a potent drug and that a comparatively small amount will generally do a very definite thing, that is, produce general anesthesia.

4. As a safeguard, never use chloroform from a pound bottle. It is much easier to estimate the amount if used from a quarter-pound bottle.

5. Never keep an animal anesthetized longer than is necessary to complete the operation.

6. Animals vary in their tolerance for chloroform. In horses of the draft type, there is some variation. With experience one soon recognizes this fact. Thoroughbreds are very temperamental, easily excited animals and they are generally much more susceptible to chloroform than the draft horse. However, Thoroughbreds, harness horses and saddle horses can be just as satisfactorily handled if these fundamental principles are carefully followed.

The mule is also more susceptible to chloroform than the average draft horse, but can be controlled very nicely without pain or struggling, for different operations.

ADVANTAGES OF CHLOROFORM

Finally, chloroform does produce anesthesia or insensibility to pain, touch or other stimuli.

It is easier, much easier, to administer than agents that require parenteral administration, especially to wild, excitable, unbroken animals and in some instances ones that are vicious.

It can be more definitely controlled ac-

cording to the individual's susceptibility than can other agents that are given intravenously and at one injection.

The safety factor is probably just as great where chloroform is used for general anesthesia.

DISADVANTAGES OF OTHER DRUGS

When other agents, such as chloral hydrate, are used to produce general anesthesia, I have observed that in a good many clinical demonstrations complete anesthesia is not obtained.

The barbiturates, such as nembutal (sodium pentobarbital), produce general anesthesia when given parenterally in proper dosage and should occupy an important place in general practice on suitably selected cases.

I have not used nembutal except in small animals, but other veterinarians report that they have used it in equine castration with good results, when given parenterally in sufficient dosage to produce general anesthesia.

There are several reasons for employing anesthesia in castration of horses. First and above all, it is humane to do so, and there is absolutely no reason why the modern veterinarian should perform this or any other painful major operation without anesthesia. No doubt, in time, this will be mandatory by law, as is the case in some countries now. Shall we wait until that time comes or shall we as a profession pioneer such principles and encourage them?

I prefer to do the operation in a strictly professional manner and in a way that is very different from that of the old castrator who came around and did them 40 years ago. He cast and tied them and then castrated them. There was nothing very professional looking about the job then and there is not today either, when done in that manner.

Today and during the entire time that I have been engaged in practice, I have found a lot of horses that were unbroken and even if one had time and could move them out, in many instances a suitable place for casting could not be readily found, to

say nothing about the time consumed that often is much needed for other purposes. In a great many instances, when anesthesia is used, the animal does not need to be taken out of the barn.

I would rather place a mask on the muzzle than to put foot straps on the legs. It is much safer in many cases.

The animal can be secured in the recumbent position with much less exertion and shock than by casting with mechanical devices.

Should you encounter scrotal hernia or other abnormalities, you are in a much better position to handle them successfully with anesthesia than without.

The horse population of this country has been seriously depleted, but it is my opinion that the horse will be with us for many years to come, that the veterinarian will continue to be employed in the future and he should be qualified to render up-to-date, professional service. At least we cannot look upon the present day, even though the draft horse has disappeared from many districts, as being a horseless age.

The pleasure horse is to be considered and in this case there is quite often more sentiment and pride in ownership than in the case of the draft horses.

Sulfadiazine was found to be preferable to other sulfanilamide derivatives in the treatment of experimental pneumococcal, streptococcal and staphylococcal infections by Long, Bliss and Ott, and a relatively high concentration can be maintained in the blood without frequent toxic accidents. The basic initial dose was established at 0.05 Gm. per kilogram of body weight.—*Abstract, J.A.M.A., Jan. 10, 1941, p. 170.*

Profound sedation, extirpation of the infected focus, moderate intravenous doses of tetanus antitoxin, frequent lumbar puncture, maintenance of adequate respiratory exchange, and constant nursing cured an acute, six-day-incubation case of tetanus in a ten-year-old boy.—*Abstract, J.A.M.A., Jan. 10, 1941, p. 173.*

Nonabsorbable Suture Material

The saga of the surgery has dictated that buried sutures must be composed of absorbable material. Yet, for many years and for many uses surgeons of the upper ranks have employed nonabsorbable thread (silk, cotton, linen) without post-operative contrition due to having left nonabsorbable sutures *in situ* forever after in the body of their surgical subjects.

In animals, especially large animals (horses, cattle), the cost of the sutures used is sometimes considerable. In a recently published article¹ two well-known surgeons (human) declare that in one year they reduced the expense of their work from \$1,500 to \$4.20 by having substituted cotton for catgut. The ratio (1500:4.2) applied to calculating costs for the long wounds of large animals is certainly attractive in view of the relative low charges veterinarians have to make for their surgical work. It doesn't pay to bury very much treasure in a five-dollar job. So, information to the effect that inexpensive nonabsorbable sutures may be substituted for expensive absorbable ones is welcome in our field. In herniology in horses and cattle, veterinarians for many years have left great rows of linen sutures to the mercy of nature's ways of handling foreign material abandoned in the structure of the living. We (LAM) have ligated large blood vessels, tunics of hernias and stumps of uteri and have closed rumens and abdominal aponeuroses and muscles with nonabsorbable material with fewer regrets than where less dependable catgut was used.

In an article entitled "The Use of Cotton as Suture Material" Meade and Long² point out the unsatisfactory results sometimes obtained from catgut and advocate the routine use of cotton sutures. These

authors refer to various articles published on the subject since 1913 and report their experiences on the use of cotton thread in their work of recent years. As shown by the drawing which we are able to reproduce through the courtesy of the Journal of the American Medical Association, the use of cotton was gratifying. The report

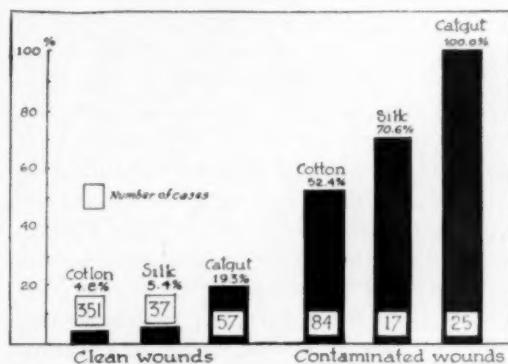


Fig. 1. Percentage of complicated wounds in relation to type of suture material employed.

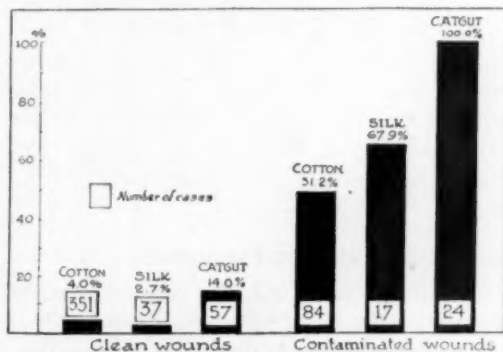


Fig. 2. Percentage of infected wounds in relation to type of suture material employed.

[These illustrations are from the Dec. 20, 1941 issue of the Journal of the American Medical Association.]

includes operations, classified as "clean" and "contaminated," performed on the gastrointestinal, urinogenital and biliary tracts. Records of 729 operations were kept, summarized and illustrated in the manner shown.

It is not aside the point to emphasize the question of cost of the sutures needed in

¹William H. Meade, M. D., East Lansing, Mich., and Carroll H. Long, M. D., New Orleans: The Use of Cotton as a Suture Material. Read before the Section on Surgery at the Ninety-Second Session of the American Medical Association, Cleveland, Ohio, June 5, 1941. J. A. M. A., cxvii (Dec. 20, 1941), pp. 2140-2143.

²Ibid.

closing wounds in veterinary surgical work inasmuch as, first of all, surgery on animals with rare exceptions must pay its fare. Economics govern its popularity in the long run.

The main advantage in the use of fabric in lieu of catgut in animal surgery, however, lies in not having to conserve material for economy's sake. One can be reckless about wasting redundant ends which are often useful and convenient to draw upon and can be thrown away if soiled. In ligations requiring a strong pull, length of ends is vital, and often the stump is too bulky to be strangulated with a weak ligature. In discussing the paper (*loc. cit.*), Dr. Donald Guthrie of Sayre, Pa., said: "If any surgeon will investigate this question with an open mind and compare his results after employment of nonabsorbable sutures with those in which catgut was used he will be convinced that there are many advantages of nonabsorbable material over catgut." Dr. J. E. Cannaday of Charleston, W. Va., added: "It holds and heals in beautifully." These two quotations confirm the opinions of veterinarians who after ample observation do not hesitate to bury nonabsorbable material in certain operations where a much better job can be done than with catgut which, regardless of all other factors, is not easy to handle, not economical and not always sterile.

Colostrum Test for Pregnancy

In animal production the economic value of early diagnosis of pregnancy is conceded, and in view thereof, physical examination of the uterus and various biological have been widely employed. Physical examinations are quite cumbersome and not reliable in all hands. Even the expert sometimes fail. The reliability of biological tests is not questioned but their practicability under field conditions leave much to be desired. The colostrum test preconized and used on a large scale by gynecologists* (and already commercialized) is, therefore, not without interest in veterinary

*Editorial, J.A.M.A., cxvii (Dec. 13, 1941), p. 2076.

medicine. The tests consist of an intradermal injection of a specially prepared colostrum. In the pregnant woman, the local reaction is practically negative, whereas in the nonpregnant a pronounced (allergic) wheal develops within half an hour. The originators claim 98 per cent accuracy; others have pronounced it less reliable. When veterinarians can go through a herd of dubious breeders with a hypodermic syringe and weed out the nonpregnant in half an hour, a new era in animal production will have started.

Mare Swallows a Five-Inch Wire

The victim was a Shire mare, 3 years old, stricken with an attack of colic lasting five days. The author, a British practitioner, C. S. Allen, M.R.C.V.S., of Devon, reports the case in the *Veterinary Board*, December, 1941.

The mare suffered incessantly from abdominal distress from onset to death, despite the calmative and purgative treatment given.

The autopsy revealed the presence of a five-inch, corroded, wire, the size of a knitting needle that had perforated the duodenum. The wire and a circumscribed necrotic area around the site of perforation are the only postmortem lesions described. [Inasmuch as swallowing metallic objects of that length is rare in horses, we join with the author in asking for reports of similar cases.]

Bronchial adenoma, a tumor affecting the bronchi of young persons, mostly women under 40, is being successfully ablated at the Medical School of the University of California. Twenty cases, all successful, are reported.—*From Science News Letter*, Oct. 18, 1941.

The English language is fighting for its life just as Latin not so many years ago fought for its life and perished. The difference is that Latin was the aggressor.

EDITORIAL

Veterinarians and the P & A Service

Every veterinarian should read, and re-read, the detailed information concerning the Procurement and Assignment Service for Physicians, Dentists and Veterinarians to which considerable space is given in this issue (pages 280-300). It answers many questions that have flooded the Washington headquarters of the Service in recent weeks and which have come to the AVMA office in considerable numbers. Special attention is invited to certain items in the published material.

The special questionnaires for circulation to every veterinarian, physician and dentist in the United States have been prepared for printing by the P and A Service in cooperation with the National Roster of Scientific and Specialized Personnel. This questionnaire will be mailed from Washington as soon as possible. Do not be concerned if it does not reach you for a few weeks and do not write in for one unless you fail to receive a questionnaire form within a reasonable time after announcement has been made that the circulation has begun.

Every veterinarian should enroll! As a part of the questionnaire, an enrolment form will be provided so that every physician, dentist and veterinarian may voluntarily enroll with the Procurement and Assignment Service. This should be done regardless of age, sex, physical condition, citizenship or employment, so that the Service may know the preferences of the individual for the military, governmental, industrial or civil agencies that may require his assistance. Enrolment of every veterinarian in the United States is a patriotic duty and professional responsibility. This enrolment has no relationship to the Selective Service registration of men under 45 which took place on February 16.

Graduate veterinarians will note the reiteration of policy of the Selective Service System respecting deferment as expressed in the memorandum from General Hershey and released under date of January 28, 1942. This indicates the praiseworthy cooperation of governmental agencies in working to secure the most effective allocation of medical, dental and veterinary personnel to meet the country's over-all needs.

Veterinary Students continue under a policy of periodic deferment by their local boards. (Efforts are being made to obtain either authorization for commissions in the Medical Administrative Corps for veterinary students in recognized veterinary colleges or for some other suitable arrangement, but the outcome is not known.) If local boards classify veterinary students in class 1-A in spite of recommendations to the contrary, they should immediately notify their deans and, if necessary, exercise rights of appeal to their local boards of appeal. If this fails, request for further appeal should be made to the state director of Selective Service and, if necessary, to the national director who has the power to take appeals to the President.

Veterinary representation and participation in the work of the Procurement and Assignment Service has been provided for throughout, and veterinarians should familiarize themselves with the organization set-up on a national, corps area and state basis as shown in Appendixes 1 and 2 of the published material. There is a committee on veterinary medicine serving in an advisory capacity to the central organization, a veterinary member on each Corps Area Committee, and a veterinarian serving as State Chairman of a Veterinary Preparedness Committee in each of the 48 States and the District of Columbia. The

duties of these veterinary components of the Service are indicated in the published information.

Veterinary Personnel for the Navy? A word of explanation may be in order for the inclusion of "United States Navy Hospital Corps Specialists" in the list of governmental agencies from which requests for veterinary personnel may be received by the Procurement and Assignment Service. There is no present provision for commissioning veterinary officers in the U. S. Navy, but, if the need arises, it seems likely that the veterinary personnel that may be needed for food inspection, especially of foods of animal origin, would be obtained under the designation shown above.

Our readers are urged to review previous Journals (January and February, 1942) and to watch future issues for further developments. The responsibilities of the qualified veterinary profession of this country were never greater in terms of services essential to national welfare. The needs for veterinary personnel to meet military needs and to maintain essential civilian and industrial services demand that every qualified veterinarian stand ready to serve where most needed.

"Drugs Topics" Program of Distribution

As the JOURNAL has frankly stated at various reprises, it has become customary for veterinarians to procure their supplies from manufacturers who are in the big business class; manufacturers who have invested millions in buildings and scientific equipment, engaged and trained technicians of the upper bracket; and who have developed systems of distribution conforming to the daily needs of the livestock industry. Standard matériel checked for scientific accuracy, and chosen for its utilitarian quality, goes directly and without delay to the practitioner's workshop and out to the farm or home for proper use, at the proper time and place. National necessity provided that service to overcome the harm of nostrums that were, and still are, foisted upon animal owners in the win-

dows and shelves of the drug stores. Just what kind of a "food for freedom program" we would now have, had this state of affairs not been checkmated by the veterinary supply firms, is a reasonable question to ask. Obviously, the over-the-counter distribution of medical and biological supplies by drug stores, and all that implies in domestic animal medicine, would now have our country up a blind alley. No, we are irresistibly opposed to expanding drug-store distribution of veterinary products, until there is a sane regulation of the vital supplies needed, in order to prevent the United States from sinking to a fourth rate nation through the unwise handling of animal disease. The direct maker-to-veterinarian system of medical and biological products grew out of a necessity which law makers could not be made to foresee. It's another case of America running on high in spite of subversive programs based upon greed. To the drug industry, granted that *Drug Topics* is its spokesman, \$81,000,000 of business is a beautiful sum to go after, but nowhere in the proposed program urged upon the druggists is the fate of the American people given a word of consideration. If the drug industry has a plan for promoting the scientific application of veterinary medicine that would be an improvement on the present setup, the AVMA is all ears for suggestions, but before presenting its case, the drug industry had better soft pedal the money side. Veterinarians, beside being pretty well satisfied with their service of supply, are altruistic. The proof is the past behavior of which *Drug Topics* seems unaware.

There were 300 million gallons of ice cream consumed in the United States in 1939, which was twice as much as for 1933. The consumption for 1940 and 1941 will be higher, owing to the large amount issued to soldiers and the decrease in unemployment.

Three fourths of the world is ill-fed in normal times, according to the Food Research Institute of Stanford University.

The J. A. V. M. A.

Although outright gasconade may not seem appropriate for a periodical ordained to pilot a branch of medicine, a cliché of that category seems justified from time to time to build up reader confidence and to tell advertisers that they are barking up the right tree.

In its 100th volume—779th issue—the JOURNAL has reached an all time high in circulation, gained not by leaps and bounds but by gradual stages. With its "research" companion, the American Journal of Veterinary Research, the Association is flirting near the 10,000 mark in paid subscriptions, memberships and legitimate exchanges. A few years ago such a figure would have been unpredictable in view of the restricted field it has to exploit—around 12,000. In other words, the Association's publications are reaching the level of unanimous support from the members of the veterinary profession.

Moreover, in addition to this incontrovertible evidence of increasing prestige, the JOURNAL carries more pages—count them—of paid advertisements than any other journal of its class, at rates based upon sound business practices and upon equal terms without any exception. Advertisers know, not only of this practically universal coverage, but also of the equality of price.

Who are these patrons? The standing of the advertisers and the quality of their copy speak for themselves. As to the readers, they include the bulk of American practitioners, the officers and teachers of the veterinary educational system, the workers in the research laboratories of the experiment stations and the service of supply, the livestock sanitarians of the federal government and of the states, the veterinarians of the zoological parks and wildlife service, the officers of the Veterinary Corps of the Army, miscellaneous groups connected with industry and public health, scientists in allied pursuits, columnists of the agricultural press and, in fact, everyone concerned in the operations of the veterinary service. However, of the 7,800

copies published this month about 65 per cent as in all other months, goes to practitioners in either the farm-animal or small animal fields. It is to these the Association owes its main debt and allegiance; it is upon their patronage that the Association either sinks or swims, and it is upon them the aggrandizement depends.

Inasmuch as there is a business side to association management, as well as an educational side and a program of ethical conduct to maintain, emphasizing the importance of income, occasionally, is a pardonable distraction from the conventional reading material, for after all, in the business side lies the success of the Association's undertakings and your welfare.

Conservation of Scholarly Journals

The American Library Association created this last year the Committee on Aid to Libraries in War Areas, headed by John R. Russell, the Librarian of the University of Rochester. The Committee is faced with numerous serious problems and hopes that American scholars and scientists will be of considerable aid in the solution of one of these problems.

One of the most difficult tasks in library reconstruction after the first World War was that of completing foreign institutional sets of American scholarly, scientific, and technical periodicals. The attempt to avoid a duplication of that situation is now the concern of the Committee.

Many sets of journals will be broken by the financial inability of the institutions to renew subscriptions. As far as possible they will be completed from a stock of periodicals being purchased by the Committee. Many more will have been broken through mail difficulties and loss of shipments, while still other sets will have disappeared in the destruction of libraries. The size of the eventual demand is impossible to estimate, but requests received by the Committee already give evidence that it will be enormous.

With an imminent paper shortage attempts are being made to collect old period-

icals for pulp. Fearing this possible reduction in the already limited supply of scholarly and scientific journals, the Committee hopes to enlist the coöperation of subscribers to this journal in preventing the sacrifice of this type of material to the pulp demand. It is scarcely necessary to mention the appreciation of foreign institutions and scholars for this activity.

Questions concerning the project or concerning the value of particular periodicals to the project should be directed to Wayne M. Hartwell, Executive Assistant to the Committee on Aid to Libraries in War Areas, Rush Rhees Library, University of Rochester, New York.

Tuberculosis, Brucellosis, Mastitis

Judging from reports coming from a wide range of territory, the high incidence of detectable mastitis in cows has become the outstanding problem of the veterinary service. The main diseases of dairy cows concerned in the production of more and better milk are *tuberculosis*, *brucellosis*, and *mastitis*. The first two are in hand and the third is not out of reach. While control measures remain in the debatable stage, plans for its eradication, down to the proverbial "modified accredited" level, are promising. Problems of animal-disease-control, more bewildering than bovine mastitis, have been solved through the research and police work of the veterinary service.

But, of the trio of outstanding farm-animal diseases named above, mastitis is the one that calls most for the technical skill of the veterinarian in private practice, as well as his general knowledge of pathology and veterinary-medical economics. We do not subscribe to the notion that mastitis is going to be mastered by putting microscopes, diagnostic reagents and germ-killing drugs in every cow stable for the layman to use under the specified direction of experts in the field of veterinary practice.¹

¹Schalm, O. W., D.V.M., Ph.D. The Control of Bovine Mastitis in the "Food for Freedom Program." J.A.V.M.A. c (Jan. 1941), pp. 119-120.

Every cow, every udder, every quarter, is a medical problem solvable only by knowledge, skill, and good judgment that is not so easy to acquire. In the matter of eradication, mastitis differs from tuberculosis and brucellosis in that the cure or final disposition of the affected animals requires accurately executed local treatment in addition to the slaughtering of incurables or spreaders. To concede that both the microscopic or chemical diagnosis and the clinical work can be safely turned over to the owner or herdsman, is equivalent to saying that practitioners are surplus baggage.

Obviously, mastitis of cows is more of an economic question than a public health one. In 1939, there were but 41 outbreaks of milk-borne diseases reported by the U. S. Public Health Service.² In these outbreaks, there were 2,509 cases of illness and but 7 deaths. Although imperfect because of incomplete reporting, these figures are revealing. During the same period and from the same sources, there came reports of 148 outbreaks of food-borne diseases striking 3,782 persons with 12 deaths. Here the economic side is, of course, unexplored territory, but that milk supply is reduced by mastitis is evident. Obviously letting the disease run rampant would sooner or later greatly depress the volume of milk to a critical level and concurrently raise morbidity from milk-borne diseases.

Moreover, purposeless talk about milk-borne diseases is as harmful as doing nothing about them. As stated in *Milk Technology*,³ "When milk is charged with responsibility we should be prepared to prove it. Hope in improvement lies in facing facts."

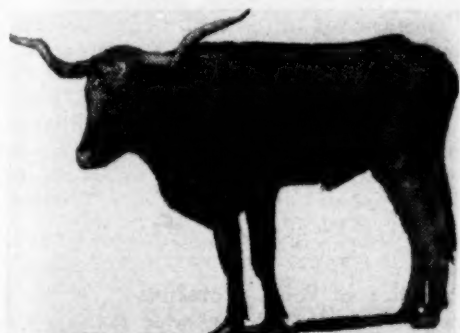
²Public Health Reports, U. S. Public Health Service, lvi (Nov 1941), pp. 2277-2284.

³Editorial, Facing the Facts. *Milk Technology*, iv (Nov.-Dec. 1941), p. 303.

Fear over the health of Americans is unfounded. Our death rate is the lowest on record and longevity at its peak, statisticians of life insurance companies declare.

Man's Greatest Conquest in Entomology

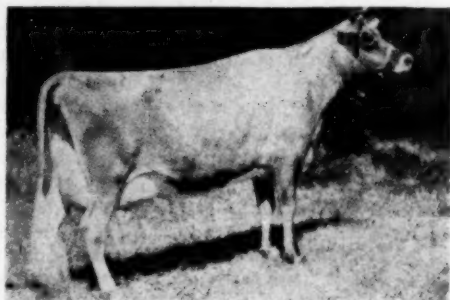
Nowhere in the field of applied entomology has man achieved as important results as in the veterinary project commonly known as tick eradication—a project that sealed the fate of the Texas Longhorn. Before tick eradication came along on the heels of successful extermination of contagious pleuropneumonia, Texas Longhorns went to the markets under quarantine lest their tick-ridden hides spread their piroplasma through the herds of the North, and better breeding stock could not be sent to the South to improve the low grade cattle that flourished on countless acres of excellent pastures because they died of Texas fever soon after arriving.



Texas Longhorn—type of cattle raised in the Southwest preceding tick eradication.

The transformation from the Longhorn of but 40 years ago to the prize beef and dairy cattle of present day Southland is an achievement made possible through the researches of the U. S. Bureau of Animal Industry which was still working in swaddling clothes—of Salmon, Smith, Kilbourne, and Curtice laboring in the laboratory that was to grow into the famous Animal Disease Research Laboratory at Beltsville, where the conquest against farm animal diseases continues on an ever-increasing scale. While the wiping out of Texas fever over a territory inhabited by more than 30,000,000 people is an acknowledged victory for veterinary science in its

own bailiwick, the food-for-freedom program of the American people of 1942 recalls “what might have been” had the cause of Texas fever never been discovered and the cattle tick was still preventing the develop-



The South now has many herds of fine dairy cattle.

ment of cattle production, not to mention the new era of epidemiology the discovery started.

Since food ranks high as an implement of war, the development of beef and dairy cattle in the South gives new values to the Bureau's historic researches of the 1890s. The conquest over an insect pest has been truly resultful in this fight for freedom. The feeding of great armies and large



The white-face Hereford now predominates in the southern beef cattle industry.

populations through research on farm-animal diseases is a lesson on national strength the veterinary profession is obligated to point out at the risk of seeming boastful.

CURRENT LITERATURE

Important Rulings on Partnerships

When a physician enters into a contract with a partner not to engage in practice within a certain distance and time, the contract holds and should be obeyed according to a ruling of the Supreme Court of North Carolina. The Court held that since both parties regarded the contract as reasonable when signed, the defendant who had broken it was bound by his agreement. The old contention that such agreements are contrary to public policy was not entertained since the violation of contracts is also contrary to public policy and such contracts are not forbidden by any principle of law or policy. In short, the ruling boils down to the fact that if such a defendant is useful to the people among whom he had located he would be equally useful to people outside of the region in which he had agreed not to locate. [*Bureau of Legal Medicine and Legislation, J.A.M.A., cxiiv (Jan. 10, 1942), p. 166.*]

British Food Industry

The British food industry continues to develop new ideas. Effort is made to develop more use of rabbits and home meat production. Canned vegetables previously upknown in England have been introduced from India. Canning and packaging have taken on new importance, and new factory methods have been introduced. Wheat bread fortified with a natural compound in lieu of the synthetic form is a result of three years of experimenting. Flour millers and others have made important discoveries governing the diastatic activity of flour. Plankton, the minute surface life of the sea, promises to become a rich source of oils and vitamin A. Soybean lecithin as an emulsifying agent is being used as an ice cream substitute made from palm oil, egg yolk and concentrated milk powder. Saccharin and glucose in an edible base is being used to replace or supplement sugar in the making of bakery goods. Yeast rich in vitamin B₁ goes into concentrated foods [meat cubes, soups, cheese and sandwich spread, *et al.*] These are a few of many changes in food production, processing and conservation. [*Eric, Hardy. British Food Industry Develops New Ideas, Food Industries, xiii (Nov. 1941), pp. 30-40.*]

Canadian Army Veterinary Corps

The article is a plea for the re-establishment of the Canadian Army Veterinary Corps which

after rendering efficient aid to the armed forces of the Dominion during the World War of 25 years ago, was abolished by executive order last year while the British Empire was girding to protect its very life all over the world. It was difficult to reconcile the abolishment with the present conception of a modern veterinary service in military and civilian life in a great war where solidarity in both groups is a life and death matter. The author reviews the article of Col. Kelser which briefly describes the work of veterinary officers in the U. S. Army who coöperate with the Medical Corps in protecting soldiers against the danger of unwholesome food, and watch over the health of animals which the modern field army continues to use regardless of popular notions to the contrary. If in the future (and we quote) "Canadian Forces should be called upon to supplement their present means of transportation by the use of horses and mules, as is done in the German army, then a nucleus of trained men would be available to expand the Canadian Veterinary Corps." [*Editorial, Canadian Journal of Comparative Medicine and Veterinary Science, v (Nov. 1941, p. 301.)*]

Persecution of Polish Professors

The fury of German attack on Polish science and culture began in November, 1939, when 180 professors and assistants of Polish universities were deported as criminals to the concentration camp at Oranienberg. At the present time (Dec. 1941), a second attack by Germans on Polish science was carried out in occupied territory. At Lwow, the Germans executed Prof. C. Bartel, professor of mathematics in the Lwow Technical College and they arrested 60 other professors, many of them elderly men. The persecutions are an integral part of the campaign aiming at the total destruction of Polish culture. All universities, technical and agricultural colleges, commercial academies and scientific societies were closed by the Germans and the secondary schools suffered the same fate. Scientific apparatus was taken to the Reich and Polish museums were looted. Publication of books and periodicals has been suspended. The professors of Poznan were deprived of their private possessions and left starving. Professor Dembinski, honorary professor of history, died from exposure and many others have died as a result of tortures suffered in camps. The record is black. They

bear witness to the degeneration of Hitlerite Germany. [*Science*, xciv (Dec. 5, 1941), p. 540.]

Sodium Fluoride Poisoning

It is generally believed that the drinking water of children containing 1 part or more per million of flourine salts will cause mottled enamel of the permanent dentures. Exposure to rock phosphate containing sodium fluoride is known to cause generalized sclerosis of the bones and muscular attachments. Though the mottling of enamel has been acknowledged, the other harmful effects have not been equally weighed, notwithstanding that radiologically demonstrable sclerosis of the skeleton have been reported.

There are American communities where the water supply has a fluoride content higher than 3 per million, not to mention the use of fluorine-containing sprays, fertilizers and livestock feeds which contaminate food. Eighty-three subjects (human) from 7½ to 71 years old, were studied at Kempton, Ill., where the fluoride content of the water supply ranges from 1.2 to 3 parts per million. No skeletal sclerosis could be detected, and the same negative results were obtained (In 31 persons, 18 to 78 years old) at Bureau where the drinking water is approximately 2.5 parts per million. Roentgen examinations were made. In both of these observations, however, typical mottling of enamel was demonstrated. The authors conclude that water supply containing 3 parts of sodium fluoride per million does not cause demonstrable sclerosis of the skeleton even when it is drunk for a long period. [*Hodges, Paul C., Fareed, O. J., and Ruggie, George. Skeletal Sclerosis in Chronic Sodium Fluoride Poisoning, J.A.M.A., cxvii (Dec. 6, 1941), p. 1938.*]

biologists, agronomists, husbandmen, [why not veterinarians?], are constantly searching for newer methods and the cure and control of diseases as means of making profits for farmers. The researches of private laboratories, of the packers, of seed companies and feed manufacturers have aided in making livestock production more profitable by digging deeper into stock farming and feeding. From the study of hay standards for cattle (1800) to the analyses of carbohydrates, proteins and fats 50 years later, and down to feeding standards based upon the balancing of rations of the present time, researches on nutrition have had important consequences on the American economic system. Research overcame the constant threat of disease to farm animals. Without this research extensive production of animals would have been impossible. The standards set up made livestock raising a profitable enterprise. Methods of controlling hog cholera, brucellosis, tuberculosis, foot-and-mouth disease, Texas fever, anthrax, and mastitis, thanks to progressive research, prevent ruin of the livestock industry, and the same tokens apply to the growing of feeds, the feeds themselves (pasture, grass, legume hays, hybrid corn, oats, barley, silage, sorghum, etc.), and the feeding programs. Much of the unthriftiness of earlier days is prevented by supplementing feeds with vitamins and minerals they lack. Genetics replaced the rule-of-thumb practices and artificial insemination is showing great possibilities. In short, the whole field of livestock production has been molded by the tireless workers of the research laboratories. The picture is completed by an alert agricultural press which gives out the information. [*Lautenbach, Philip A.: The Influence of Research on Livestock Practices, The Cattleman, xxvii (Feb. 1942, pp. 31v32.)*]

The Gift of Veterinary-Medical Research to the Nation

Scientists in the 16th century wondered what makes the grass grow and weird theories reigned. Because the atomic elements were yet to be discovered progress was slow. But with the basis of chemistry discovered, scientific, biological research began. Knowledge of plant growth and soil fertility came in the 19th century and at the same time came the science of animal life and the value of the different foods in animal nutrition. Realizing that perfect agriculture is the foundation of trade and industry, the keynote of scientific research was sounded. Research was of the experimental type. In livestock production, searching for better methods of breeding predominated. America was thereby given a sound basis for rapid development. Chemists,

Certified Milk for Children

In the past, too much emphasis was given to beautiful barns and surroundings and too little to advertising the real methods of producing certified milk. The additional labor and overhead required to produce dirt-free milk through the instrumentality of clean barns, clean cows, animal health and the training of milkers have been submerged by the esthetics of the dairy cows' environment. All agree that certified milk has superior qualities for feeding children under three years of age. Colon strains of bacteria are not destroyed by pasteurization. Moreover, excessive bacterial contamination of milk, raw or pasteurized, incites intestinal trouble in children. The difficulty and cost of attacking the mastitis problem are acknowledged. Few milk control agencies have successfully coped with this problem. Nothing effective has been done in this respect, with

few exceptions. Here, the quality of certified milk is outstanding and it needs advertising. The question must be presented squarely to the public and medical profession to justify the sale of certified milk at least for the feeding of infants during the age of serious intestinal upsets due to consuming inferior grades of milk. [Batsche, J. H., D.V.M. Secretary, Medical Milk Commission, Cincinnati Ohio. *Certified Milk*, xvi (Dec. 1941), pp. 7 and 14.]

Will the U. S. Go Hungry?

A review of the food situation shows that hoarding sent the consumption of sugar to 7,900,000 tons last year and that this year there will not be enough to sustain the normal rate. Some sugar is scheduled for the lend-lease program (Russia and Britain) and more will be required for the making of industrial alcohol and smokeless powder. Corn and wheat will be used to offset the drain. Increased production of oil-producing plants (soybeans, peanuts, cottonseed, etc.) and lard is necessary to provide substitutes for the erstwhile imports. The prospect is for the slaughter of 28,000,000 cattle this year, which is 8 per cent more than last year. Pork will be plentiful regardless of lend-lease exports. There will be no shortage of wheat products owing to a large carryover and increased acreage. Dairy products will reach an alltime high and egg production and chicken supply have been increased and are expected to be sufficient. Wool shortage will not be grave owing to large stocks and imports, but civilian needs have to be restricted by 40 to 50 per cent. Fruits and vegetables are expected to equal 1941. Cottonseed oil and long-staple cotton call for an increased acreage of 2,000,000. In the canning industry, shortage of cans, not shortage of food, is a limiting factor. Farmers are able to raise what the nation needs and the fear of surpluses has given way to the determination to go ahead notwithstanding that supplies are higher than ever before. [Editorial, *United States News*, Jan. 30, 1942.]

Culling Sheep to Improve Wool Production

Inasmuch as New Mexico ranks lower than other states in poundage of wool per sheep, effort was made by the state agricultural college to improve that situation by culling flocks of their short-wooled members. Four years' experience in that respect brought promising results.

Since sheep growing in that state is strictly a range enterprise and sheep have to stand severe weather, improving the length of the wool is an important but tedious process. To qualify under the culling plan ewes must have wool two inches long at the tuber coxae.

Fleeces of good sheep should weigh between 5 and 15 pounds. Out of 72,000 sheep worked, the fleece weight ranged from 2.06 to 3.55 pounds. A flock that showed 51 per cent of good quality sheep was increased to 88 per cent of good sheep by one culling. The improvement was an increase of fleece weight to 7.05 to 8.15 pounds.

Culling requires close coöperation of the sheep growers and correct records must be kept to accomplish the purpose. Rams must be included and should show even better quality than the ewes. A flock of 3,535 sheep averaged but \$2.27 worth of wool per head or a loss to the owner of \$6,389 as compared with \$4.28 per head for culled ewes. Culling is simple and does not require a great deal of experience although technical supervision of the work should be continued for at least three years in order to accumulate evidence by which to check the effect of the work. [Ellis, Geo. F. *Range sheep improvement in New Mexico, The Extension Animal Husbandman, Series No. 63* (Sept. 1941), USDA.]

Science and National Defense

The National Academy of Science was created during the Civil War by an Act of Congress. Its purpose was to supplement the scientific and technical work of the Army and Navy. In 1940, the Council of National Defense established the National Defense Research Committee (NDRC) for the same purpose, that is, to improve the nation's military and naval strength. This calls for the aid of civilian groups of scientists when emergencies come along. The Committee consists of eight members: six civilians, and an officer each of the Army and Navy. The Committee has 4 divisions and 60 sections operating through colleges, universities, research institutes and industrial laboratories and aims to avert both financial gain or loss from the participation, and with minimum disruptions and inconvenience. It has a personnel of about 2,000 who work in close liaison with the Army and Navy. It has dawned upon the people that scientists are not necessarily long haired men working in the seclusion of their laboratory paraphernalia but that they are a group of practical workers who have won popular respect, and accomplished great things which can be put to work when war comes along. Britain was saved when raided in 1940 through scientists, working since 1935 without much encouragement, who offset the element of surprise with better radio detection. Scientists do more than talk and they have taken their coats off and gone to work to defend our way of life. [Bush, Vennevar, *Science and the national defense. Science*, xciv (Dec. 1941), pp. 571-574.]

Shortage of Physicians

For more than three years the Committee on Resettlement of Foreign Physicians has discussed the critical shortage of physicians and it has assisted qualified emigre physicians to adapt themselves to American conditions. There are 1,500 such physicians for placement in rural communities and in hospitals short of internes. American authorities are urged to follow the British plan of using the services of these emigres. The condition in this country is similar, with the difference that our needs are less urgent and will probably remain *in statu quo* for the next six months, when the dislocation of physicians from rural districts will be more acute. The AMA has urgently advised that serious consideration be given to the problem of placing emigre physicians, since it would be unwise to curtail medical service. The Army, Navy, Indian Service and civilians are in need of them. [*Scientific Events, Science, xciv (Dec. 12, 1941), p. 555.*]

Social Implications of Vitamins

Within our own memories, cultivated herds and crops, houses, tools, stores of metals, coal and oil, and mechanical and electric power has made life secure and leisureful; and man has learned of his microbic enemies. Man's latest achievement is the discovery that food, though the same as that eaten by the ancient, is now known to contain scores of factors which contribute unseen, but in a profound manner, to his health. Man once envied the luxurious food of the rich and held in contempt the plain ration of the poor. Food was largely a matter of personal prejudice. Women were anemic and were expected to be that way until science, as late as 1936, showed that they have the same level of hemoglobin as men if their food is equal. The conviction now is that something systematic should be done about our food. The old notion that the income of the poor is not sufficient to provide that class with adequate nourishment no longer obtains. Experiments show that animals thrive on a simpler diet than that of the majority of human beings. Because the food of man has not been as systematically studied as that of animals, its nutritive excellence has not been reduced to numerical terms. Epicurean delights represent the decline of a civilization just as simplicity of food marks the ascendancy of culture.

FOOD AND WAR

Food has governed the tides of conquest. It has been a prize of war and multiplied the populations of the victors, increased their pugnacity, and reduced the birth rate of the vanquished.

Germany has practiced less decortication of grains than the other countries of Europe (Spain, Britain, Scandinavia and the Low

Countries). Malnutrition makes pacifists and irritable, depressed, quarrelsome people. It is only in recent months that attempts have been made to reform mass nutrition: Britain under the stress of war, when reinforcing bread became mandatory, and we in following the example by disapproving the robbing of grains of nutritive quality in refining them. We now add thiamin, riboflavin, nicotinic acid and iron to wheat flour. War brought about the change. Biochemists have begun to realize that nature does not cast aside what it has produced. Man has been doing the discarding and thus has diminished his survival value. Experimental study, begun about 200 years ago, offers the tangible preventive against the arrogance of autocrats, reformers, despots and Fuehrers who hinder man's upward climb by setting aside the broad principles governing the drama of expanding human life and interrupting the main trends of human thoughts.

Ancient civilization died of depopulation born of substitution of artificial luxury for natural simplicity; ours faces that cause of decay. In short, putting food with war is not a far-cry. (Williams, Robert R., chemical director, Bell Telephone Company. *Social Implications of Vitamins, Science, xciv (Nov. 28, 1941), pp. 502-506.*)

Tuberculosis in Horses

Among the horses examined at the Hanover clinic during the eight-year period of 1932-1940, 64 cases of tuberculosis were diagnosed. In the 37 examined *post mortem* lesions were found in the spleen, lungs, kidneys, pleura and in the mesenteric, pharyngeal and cervical lymph glands. Others were diagnosed by the intradermal tuberculin test. Thus the incidence of tuberculosis in horses was established to be 1.5 per cent in the animals examined. The local reaction was a hot, painful swelling, 20 to 25 centimeters in diameter, from which cordiform lymph vessels radiated to a distance of 50 centimeters. The disease occurred more often in draft horses and in the lighter breeds and crossbreeds. The diagnosis was confirmed in some instances by auscultation and rectal palpation of the mesenteric glands per rectum. Most of the horses were victims of infectious anemia which seems to predispose horses to tuberculosis. [Oppermann, M. *Tuberculosis in Horses. Deutsche tierärztliche Wochenschrift, abstract, the Veterinary Record. Dec. 13, 1941.*]

The Rats of the Poultryman

The common rat is man's most resourceful and persistent enemy. Rats are a menace to man's health, safety and comfort. It requires 265,000 farmers to replace the food destroyed by this murderous rodent of farm buildings. The tune in money hits the high chord of \$25,-

000,000 annually, and poultrymen pay the highest toll because more than 60 per cent of the country's poultry is housed in rat-infested buildings. The loss in grain is high because rats destroy more grain than they eat by taking only the germ from cereal grains, and the loss from killing chicks runs into big figures. One poultryman lost 1,500 chicks in one night and another 610, although "he had seen only 4 or 5 rats hanging around." There is also loss from stolen eggs, ruined grain sacks, and weakened buildings. Cannibalism among chicks may be started by rats. Infectious diseases of man and animals is associated with the presence of rats. Rats travel from farm to farm. Tagged rats released on dumps have been recaptured four miles away. The remedies are rat-proof buildings, shooting, trapping, poisoning, gassing (auto exhaust) and eternal vigilance. [Dyer, George W. *Poultry Enemy*, No. 1, *Poultry Tribune* (Feb. 1942), pp. 9 and 39.]

Cryptorchidism: Endocrine Treatment

Although 20 per cent of human cryptorchids derive benefit from hormone treatment, the authors believe that only extra-abdominal cases respond. They conclude that hormone therapy produces descent of only those testicles which would have descended spontaneously by the time of puberty. Reports to the effect that 55 per cent of intra-abdominal cases yield to endocrine therapy were not confirmed by their observations. Only 2 out of 34 such cases yielded to hormones.

Hormone therapy is, however, valuable in the selection of cases for early surgical intervention—to circumvent eunuchoidism and to preserve normal skeletal development. Sex hormone at the time of puberty exerts an important influence on the growth of the epiphyseal centers of the vertebrae and of the long bones. Its absence at this time of life disturbs the relations between the length of the trunk and that of the limbs and prevents penial development. Therefore, early intervention, both glandular and surgical, is important. The testicles can function normally only in the scrotum.

When glandular therapy is employed, it not only is possible to determine at an early age whether operative intervention is necessary, but by enlarging the parts it facilitates the surgical work. The products used were Fol-lutein (Squibb), Korotrin (Winthrop) and Proanturon (Schering). Pituitary and equine gonadotropin were pronounced not suitable since they produce little gonad stimulation. [Thompson, W. O., M. D., and Heckel, N. J., M. D. *Endocrine Treatment of Cryptorchidism*, J.A.M.A., cxvii (Dec. 6, 1941), pp. 1953-1956.]

Soybean Goiter in Chicks

Goiter in chicks produced by feeding soybean products can be partially prevented by heating them. Iodine also was found to counteract the goitrogenic action. Soybean extractives were quite as goitrogenic as the parent meal, and rations containing 12 per cent of soybean meal were as prone to produce goiter as those containing 25 per cent. Alfalfa but not casein, inactivated the tendency of soybean to produce goiter. The investigation included extirpation, weighing and microscopic study of the thyroid gland. [Wilgus, H. S., Jr., Gassner, F. X., Patton, A. R., and Gustavson, R. G. *The Goitrogenicity of Soybeans*, abstract E.S.R., lxxvi (Jan. 1942), p. 77, from *Journal of Nutrition*, xxii (1941), pp. 43-52.]

Dimock's Work on Equine Diseases

W. W. Dimock, 22 years with the University of Kentucky, is the "Man o' War" in the field of research on equine diseases. His contributions have value "beyond measurement" to the horsemen of Kentucky and elsewhere. Outstanding is the discovery of a promising vaccine for "virus abortion" which he and staff differentiated from bacillary and other forms of abortion in mares. Though this represents 19 years of investigational work, it was a veritable blitzkrieg as time goes in research work of that character. The resulting vaccination is pronounced effective. Studies on periodic ophthalmia which affects 10 per cent of the total horse population and 60 million dollars worth of horses in Kentucky alone is another baffling equine problem which Dimock has undertaken to solve. The difficulty of running down the nature of "virus abortion" is told in newspaper language. The work done on the rôle of paratyphoid organisms in horse breeding and the well-known research carried out on the skeleton of "wobblers" signalize the fact that these outstanding mysteries of equine pathology are being studied under critical eyes with promising results in sight. [Bower, Alex. *Research in Equine Diseases at the University of Kentucky is a Great Aid to Horse Breeders*, *Sunday Herald-Leader*, Lexington, Ky., January 11, 1942.]

The New Army of the United States

This book is an official document describing the military forces under development. The historic policy of maintaining but a small standing army has given way to a new pattern conforming to modern methods of warfare. Dated August 1, 1941, the author already found it expedient to point out that it is too late to begin training officers and men in modern warfare after war has been declared. [A

permanent and larger military force has since become a national necessity.]

Under the constitution, the Congress exercises the power to raise and maintain armies and to appropriate the money required. This having been done, the General Staff set out to effect the necessary organization for the gigantic task in advance of actual hostilities.

In July, 1939, the army consisted of but 174,000 officers and enlisted men scattered among 130 widely separated stations. There was no complete field organization, no complete division, no corps nor GHQ units, but few small air-corps squadrons, and a shortage of transport equipment. The 131,000,000 Americans were truly unprepared—unprepared to a serious degree little realized by our pacific population.

In September, 1939, when the Congress authorized the Army to add a paltry 37,000 officers and men, it became possible for the first time in American peacetime history to assemble 70,000 troops for simulated warfare. The total strength was then 227,000.

In May, 1940, the Regular Army was increased to 375,000, and in September of that year (1940) through the induction of National Guard units and enforcement of the Selective Service Act the forces attained the strength of 1,500,000. For making this large force efficient at a critical moment, a debt is owed to the former, small military personnel whose talent was acquired through years of experience and studies of modern arms, modern organization and modern tactics.

From the section entitled "The Medical Department" one reads:

For the professional medical care of the Army of the United States of 1,400,000, there are required 8,500 doctors of medicine, 2,100 dental surgeons, 1,000 doctors of veterinary medicine, 8,500 trained nurses, and 67,000 Medical Department enlisted men. It is anticipated that 50,000 horses and mules per Army unit will be used and the Medical Department must supply the services of veterinary officers for these, for the Army Remount Service, and for the inspection of meat and dairy products intended for army consumption to insure soldiers have only the best meat and dairy products.

Were the War Department's ratio of medical personnel to total strength demanded in developing an armed force of 5 to 6 million, as it evidently will, approximately 5,000 veterinary officers will be drawn into the military service and thus impose an added responsibility upon the veterinary colleges. The figures appear to exceed the number of American veterinarians of military age and physical fitness.

The book is a compliment to the War De-

partment. It gives a true picture of the military set-up required to guard our fireside and freedom, and is a document that should be widely studied by our traditionally uninformed population. Few, indeed, are aware of the amount of preparedness a modern military operation represents. [*The New Army of the United States. War Department Document supplied by Lt. Col. Shaw, G.S.C., Department of Public Relations, Washington, D. C.*]

Low Temperature Physics

One of the marvels of this hour is the extraordinary performance of the Russian troops. It was generally but erroneously supposed that Soviet industry was badly managed. Those in scientific fields, however, who were compelled to pay attention to Russian research, agree that much of it has been of the higher order, comparable to the best British or American effort. In the field of low temperature physics, in both the pure and applied domain, Russian work merits attention. In 1929, the work of the Institute of Physical Problems under P. L. Kapitza was shifted to low temperature problems because they were recognized as of prime importance in the study of metals, gases and low temperature effects on industry. A liquifaction apparatus perfected at the Institute has rendered all existing low temperature equipment obsolete. It is probably used in the production of liquid air, synthetic rubber plastics, and explosives. The Russians have linked low temperature physics with industry and they have instituted a new branch of engineering called "deep refrigeration" and new methods of producing oxygen, nitrogen and argon from atmospheric air. [*Lane, T. C., Yale University. Low Temperature Physics and the USSR, Science, xciv (Jan. 23, 1942), pp. 84-86.*]

Periods of American Agriculture

M. S. Eisenhower, Land Use Coordinator, USDA, divides the history of American agriculture into three periods, namely:

Period I extends from colonial days to the 1920s. It was characterized by profitable exploitation and expanding domestic and foreign markets.

Period II was the first time nation-wide adjustment of production (plant) was attempted. It was an awakening to the agricultural conservation and extended to the present war.

Period III or the present time is one in which new types and degrees of national, regional and local adjustment in distribution and consumption are called for. While its implications are immense, its size and shape can not be determined as yet.

THE NEWS

AVMA Activities

Awaiting final reports on the personnel of the state preparedness committees, the publication of the roster of these committees promised for this issue has been postponed for the April issue when those who have been nominated and officially appointed to these important positions, can be announced without any omission.

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Call for Volunteer Papers for 1942 AVMA Annual Meeting

Members are invited to offer papers for the scientific program of the 79th annual meeting, to be held in Chicago. The dates are August 17-20.

The Committee on Program is composed of the chairman and secretaries of the six sections (*vide* the Journal, Sept., 1941, p. 191), and is charged with the duty of planning the programs of the sections, selecting the reporters and titles and arranging the material so as to avoid duplications.

The Committee will welcome the offer of papers by members up to April 15. In order to avoid conflicts or duplications of papers already scheduled, the final decision as to acceptance will be made by the respective section officers.

The closing date of April 15 must be adhered to so that delay in planning the section programs will not complicate the work of the Committee which is already handicapped by a late start due to the transfer of the meeting from San Francisco to Chicago. Offers of papers should be addressed to the Association's office, 600 S. Michigan Ave., Chicago, Illinois, with a copy to the section officer concerned. This is requested because the Executive Secretary serves as chairman, *ex officio*, of the Committee on Program and must correlate program developments for the Committee.

The title of the proposed contribution and the section for which it is intended (General Practice; Sanitary Science and Food Hygiene; Research; Small Animals; Poultry; Surgery and Obstetrics) should be given in the communication. Offers or suggestions for outstanding papers and speakers for the General Sessions of the meeting are also welcome. Special efforts are being made to have a program that is timely and that will reflect the problems and developments in veterinary defense and

war activities. Send your ideas to the Committee *now*.

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A Noteworthy Wartime Gathering

The Medical Preparedness Committee of the Chicago Medical Society sponsored a meeting of more than 1,000 physicians, dentists and veterinarians from three states at the Museum of Science and Industry, Jackson Park, Chicago on the afternoon of February 22. The meeting was designed to review the rôles of these professions in the war effort, and to clarify them by answering questions asked by the audience.

Chairman H. Prather Saunders of the Medical Preparedness Committee of the Chicago Medical Society, presided. Among the more prominent speakers selected to enlighten the large audience were:—

Sam F. Seeley, Major, M.C., U. S. Army, executive officer, Procurement and Assignment Service.

Morris Fishbein, editor of the Journal of the American Medical Association.

Lieut. Col. Paul G. Armstrong, state (Ill.) director of selective service.

Charles H. Phifer, chairman of the 6th Corps Area medical advisory committee on procurement and assignment.

Besides a large representative group of Chicago veterinarians in attendance were:—

Dean Ward Giltner, Michigan State College, veterinary member, 6th Corps Area advisory committee, East Lansing, Michigan.

B. J. Killham, Michigan State College, chairman of the Michigan veterinary preparedness committee, East Lansing, Michigan.

Walter Wisnicky, University of Wisconsin, chairman of the Wisconsin veterinary preparedness committee.

A. E. Bott, chairman of the Illinois veterinary preparedness committee.

C. C. Hastings, secretary of the Illinois Veterinary Medical Association, Williams-ville, Ill.

The crowded hall was an outward expression of the general interest of physicians, dentists and veterinarians in the national emergency.

APPLICATIONS

First Listing*

- G. A. ALLEN
Conrad, Iowa
D.V.M., McKillip Veterinary College, 1918.
Vouchers: A. H. Quin and J. A. Barger.
- ALLEN, G. H.
715 E. 9th St., Ft. Worth, Texas.
D.V.S., Kansas City Veterinary College, 1911.
Vouchers: W. G. Brock and R. D. Turk.
- BARNHART, EMMETT P.
1127 Industrial Trust Bldg., Providence, R. I.
D.V.M., Ohio State University, 1907.
Vouchers: J. S. Barber and Howard F. Ferguson.
- BOWKER, G. W.
R. F. D. No. 1, Rolla, Mo.
D.V.S., Kansas City Veterinary College, 1909.
Vouchers: J. C. Flynn and J. L. Wells.
- BRUNDAGE, H. S.
6341 Broadway, Chicago, Ill.
D.V.M., Chicago Veterinary College, 1915.
Vouchers: L. A. Merillat and J. G. Hardenbergh.
- BUTTON, A. I. Sr.
219 S. Central, Kent, Wash.
D.V.S., Kansas City Veterinary College, 1909.
Vouchers: Otto L. Montgomery and R. A. Button.
- CALLANDER, W. G.
506 Ann St., Parkersburg, W. Va.
D.V.M., McKillip Veterinary College, 1917.
Vouchers: S. E. Hershey and P. M. Cellar.
- CASTLEBERRY, M. W.
418 Government St., Baton Rouge, La.
D.V.M., Texas A & M College, 1941.
Vouchers: E. P. Flower and Dudley D. Conner.
- CILLEY, G. CARROLL
Iron Works Rd., Concord, N. H.
B.V.Sc., Ontario Veterinary College, 1926.
Vouchers: W. H. Tornow and R. W. Smith.
- CLAUSEN, C. N.
1127-4th St., Los Banos, Calif.
D.V.M., San Francisco Veterinary College, 1913.
Vouchers: W. J. C. Ramsay and M. Lunstra.
- DAPPEN, B. E.
Grettinger, Iowa.
D.V.S., Kansas City Veterinary College, 1911.
Vouchers: A. H. Quin and Roy R. Dappen.
- EBRIGHT, MARVIN S.
Mifflintown, Pa.
V.M.D., University of Pennsylvania, 1938.
Vouchers: B. N. Ebright and Wm. H. Ivens.
- FERRELL, EDWIN H.
418 Government St., Baton Rouge, La.
D.V.M., Alabama Polytechnic Institute, 1941.
Vouchers: E. P. Flower and Dudley D. Conner.
- FISCHER, FRED. F.
312 Federal Building, Boise, Idaho.
D.V.M., Kansas City Veterinary College, 1917.
Vouchers: A. K. Kuttler and J. G. Hardenbergh.
- GOMEL, C. L.
2623 E. 4th Ave., Spokane, Wash.
D.V.S., Kansas City Veterinary College, 1908.
Vouchers: J. C. Exline and M. O. Barnes.
- GOULD, O. S.
Nevada, Mo.
D.V.M., Kansas City Veterinary College, 1941.
Vouchers: J. L. Wells and J. C. Flynn.
- GREINER, NORMA L.
1207 State Office Bldg., Richmond, Va.
D.V.M., Michigan State College, 1941.
Vouchers: A. J. Sipos and H. Sydnor Miller.
- GRIFFIN, H. M.
Morning Sun, Iowa.
M.D.C., Chicago Veterinary College, 1908.
Vouchers: John D. Reardon and J. E. Akin.
- HINK, GEORGE G.
110 S. 5th St., Mapleton, Iowa.
M.D.C., Chicago Veterinary College, 1909.
Vouchers: Robt. D. Wall and A. H. Quin.
- HOUSTON, RAFF ASHLEY
Box 502, Blakely, Ga.
D.V.M., Alabama Polytechnic Institute, 1946.
Vouchers: Chas. C. Rife and J. E. Severin.
- HUFFT, E. E.
Liberty, Mo.
D.V.S., Kansas City Veterinary College, 1908.
Vouchers: J. C. Flynn and J. L. Wells.
- JAMES, WILLIAM D.
112 N. Jackson, Greencastle, Ind.
D.V.M., Indiana Veterinary College, 1917.
Vouchers: R. L. Smith, Alta R. Bruner and C. C. Donelson.
- KIRSCH, P. N.
115 W. Benton, Carrollton, Mo.
D.V.M., St. Joseph Veterinary College, 1921.
Vouchers: J. C. Flynn and J. L. Wells.
- KLEEMAN, ED. P.
2000 Harle Ave., Cleveland, Tenn.
D.V.M., Ohio State University, 1928.
Vouchers: Guy P. Hatchett and Dwain T. Bowie.
- LEIGHTON, MARION L.
529 S. Broadway, Yonkers, N. Y.
D.V.M., Cornell University, 1938.
Vouchers: Gertrude F. Kinsey and C. P. Zepp.
- MENAU, WILLIAM
1346 Vandercock Way, Longview, Wash.
D.V.M., State College of Washington, 1938.
Vouchers: J. C. Exline and M. O. Barnes.

*See January 1942 issue, p. 92.

- MODLIN, E. D.
Eaton, Ohio.
D.V.M., Indiana Veterinary College, 1915.
Vouchers: Harvey E. Whiffing, John O. Riester and W. F. Guard.
- MURPHY, OLIN T.
358 S. Kirkwood Rd., Kirkwood, Mo.
D.V.S., Kansas City Veterinary College, 1910.
Vouchers: J. C. Flynn and S. W. Haigler.
- NORMAN, M. E.
1346 Vandercock Way, Longview, Wash.
D.V.M., Iowa State College, 1918.
Vouchers: J. C. Exline and M. O. Barnes.
- REY, ROBERT S.
Rt. 2, Box 510, Visalia, Calif.
D.V.M., Michigan State College, 1938.
Vouchers: John L. Tyler and Geo. S. Rey.
- STALLINGS, W. L.
Forest City, N. Car.
D.V.M., Kansas City Veterinary College, 1917.
Vouchers: J. H. Brown and A. A. Husman.
- STRICKLER, BERT
Skidmore, Mo.
D.V.M., Kansas City Veterinary College, 1918.
Vouchers: J. C. Flynn and J. L. Wells.
- THOMPSON, JOHN BOYD
Oakes, N. Dak.
M.D.C., Chicago Veterinary College, 1910.
Vouchers: L. A. Merillat and Frederik Low.
- WEISBARD, E. C.
Allison, Iowa.
D.V.M., Chicago Veterinary College, 1913.
Vouchers: A. H. Quin and T. W. Munce.
- Lever, R. M., 374 Victoria St., Lambert Co., Chably, Que.
McCamish, John N., 2907 Idalia St., El Paso, Texas.
McCausland, E. J., Brewster, Minn.
McIlmurray, M. F., Elkton, Mich.
McMahan, Raymond L., 4429 Weisser Park, Fort Wayne, Ind.
Mandeville, W. D., 1953 E. 75th St., Chicago, Ill.
Marshall, Lloyd A., 403 Federal Bldg., Cheyenne, Wyo.
Moore, C. A., P. O. Box 883, Cheyenne, Wyo.
Nichols, Robert W., Fryeburg, Maine.
Roberts, John J., 406 W. James St., Columbus, Wis.
Rogers, R. L., P. O. Box 1692, Fort Worth, Texas.
Rose, C. J., 605 E. First St., Ellensburg, Wash.
Schmille, H. F., Westboro, Mo.
Scott, David C., Tekamah, Neb.
Spooner, A. D., 72 Franklin St., Barre, Vt.
Stephan, C. F., 5618 Harper Ave., Chicago, Ill.
Still, Seaborn H., Box 2522, Reno, Nev.
Tanner, Warren L., 520 N. Jefferson St., Van Wert, Ohio.
Veilleux, J. M., 73 Pine St., Quebec, Que.
Vine, Sidney M., 73 W. Merrick Rd., Valley Stream, L. I., N. Y.
Wirtz, I. G., Sugar Land, Texas.
Wood, Dyar C., 406 E. Main St., Greensburg, Ind.
Woodcock, John M., Belle Meade, N. J.
Wormely, G. M., State Center, Iowa.

Second Listing

- Bardens, G. W., Lowell, Ind.
Becher, R. J., New Vienna, Ohio.
Bradley, O. C., Fairview, W. Va.
Carey, Roy T., 815 Rainier Ave., Seattle, Wash.
Chamberlain, Hermel, La Trappe, Que.
Cox, Herbert M., 220 Pondfield Rd., Bronxville, N. Y.
Crawford, N. N., 3161 Ravenswood Ave., Baltimore, Md.
Davis, Robert W., 704 S. College Ave., Fort Collins, Colo.
Derrer, Wallace L., Mt. Carroll, Ill.
Dorman, H. D., 1700 Evans, Fort Worth, Texas.
Eckert, Arthur F., 3334 W. 62nd St., Chicago, Ill.
Fay, Charles P., R.R. No. 4, Wenatchee, Wash.
Flora, W. G., Chalmers, Ind.
Goodman, L. J., Norton, Kan.
Grist, E. A., Box 787, New Braunfels, Texas.
Harmeling, Jonathan, 528 Polk Court, Sheboygan, Wis.
Kading, E. J., Gibbon, Minn.
Keene, H. L., Shabbona, Ill.
Klussendorf, R. C., 430 W. Prairie St., Columbus, Wis.
Kucher, Paul C., Station Veterinary Hospital, Fort Bliss, Texas.

AMONG THE STATES

Arizona

The officers of the Arizona Veterinary Medical Association elected for 1942 are K. O. Lassen, Phoenix, *president*; J. B. McQuown, Tucson, *vice-president*, and Vego Mikkelsen, *secretary-treasurer*.

Delaware

State Association.—Secretary C. C. Palmer writes: "For the records of your officer I wish to advise that the officers for 1942 elected at the annual meeting, December 18, 1941, are H. P. Eves, Wilmington, *president*; C. C. Palmer, Newark, *secretary-treasurer*; and J. L. Cherry, Dover, H. L. Fell, Wilmington and J. R. West, Milford, *directors*."

Illinois

State Association.—The 60th annual meeting of the Illinois State Veterinary Medical Association was held in Springfield, January 23-24, 1942. The speakers and their subjects were:

H. J. Shaughnessy, of the Department of Health, Springfield: Encephalitis in Human

Beings Caused by Virus of Equine Encephalomyelitis.

R. E. Lubbehusen, Pathologist, Purina Mills, St. Louis: The Clinical Diagnosis of Some Nutritional Deficiencies.

E. S. Weisner, Extension Poultry Pathologist, Michigan State College: Common Diseases of Poultry.

H. W. Jakeman, Boston, Mass., President, American Veterinary Medical Association: The Influence of the A.V.M.A. on the Past, Present and Future of the Veterinary Profession.

C. N. Bramer, Evanston: Dentistry as Applied in Small Animal Practice.

H. L. Moser, Pontiac: Canine Leptospirosis.

R. C. Klussendorf, Columbus, Wis.: Mastitis and Udder Troubles.

James Farquharson, Head, Department of Veterinary Surgery, Colorado State College: Illustrated Surgical Procedures in Large and Small Animals.

F. W. Wood, Cutter Laboratories, Berkeley, Calif.: Immunological Studies with Hog Cholera Tissue Vaccine.

R. O. Nye, Buda: Enteritis of Swine.

H. R. Hester, Farmer City: Diseases of Feeder Cattle.

The officers elected were. **W. C. Glenney**, Elgin, *president*; **A. E. Bott**, East St. Louis, *vice-president*; **C. C. Hastings**, Williamsville, *Secretary-treasurer*; **C. N. Bramer**, Evanston, member of the Executive Board.

C. C. Hastings, *Secretary*

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Local Committee for 1942 AVMA Convention in Chicago Organized

A meeting of AVMA members and other veterinarians in the Chicago area was held at the Hotel Windermere Sunday afternoon, February 22, for the purpose of preliminary organization for the 1942 annual meeting which has been transferred from San Francisco to Chicago as announced in the February Journal (p. 177).

The following men were elected to serve on the Local Committee on Arrangements:

General Chairman—**H. Preston Hoskins**
General Vice-Chairman—**W. C. Glenney**
General Secretary—**J. G. Hardenbergh**

COMMITTEE CHAIRMEN

Hotels and meeting places—**C. L. Miller**
Public relations and publicity—**L. A. Merillat**
Educational exhibits—**J. S. Bengston**
Technical exhibits—**E. E. Sweebe**
General entertainment—**R. F. Vermilya**

Demonstrations (motion pictures, etc.)—**J. V. Lacroix**

Army—**Col. J. E. Noonam** and **Lt. Col. L. L. Shook**

B. A. I.—**A. N. McGregor** and **A. K. Kuttler**
Garage and Parking Facilities—**R. L. Tinkham**

Further organization of necessary committees and selection of committee personnel will take place at future meetings. It is planned to hold frequent meetings in order that arrangements may proceed as rapidly as possible.

The exact dates of the meeting and the headquarters hotel will be announced in the April issue.

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Swift & Company, Chicago packers have established a scholarship for research in nutrition for the purpose of aiding the Federal Government in its national program to improve nutrition. The fellowships provide for research work in universities and medical schools through funds the company has set aside as grants-in-aid. The fellowships are for one year but may be renewed when the work of the project warrants extension. Placement of the grants will be coordinated by **R. C. Newton** and his staff of the Swift laboratories at the Union Stock Yards.—*Science*, Dec. 19, 1941.

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A Change at the University.—The Board of Trustees of the state university have raised the Division of Animal Pathology and Hygiene to departmental status. The division which has been operated under the direction of **Robert Graham**, will henceforth be identified as the Department of Animal Pathology and Hygiene in the agricultural college and experiment station. The change enables the Department to function to better advantage in its teaching, research and diagnostic work. The department is responsible for the pre-veterinary training adopted by the University in lieu of a complete course in veterinary medicine.

Robert Graham was made chief of the Department; **Jesse Sampson**, associate chief and associate professor; **C. C. Morrill**, associate pathologist; **L. E. Boley**, assistant pathologist and parasitologist; and **W. M. Thorning** and **C. A. Lemon**, assistants. The order provides also for three half-time assistants: **C. M. Wilson**, **M. T. Jones** and **Vera M. Hanawalt**. **J. A. Henderson** and **R. H. Hurt**, associates, are on leave for military duty.

The order creating the Department was issued by **Dean R. P. Rusk** of the College of Agriculture, December 4, 1941.

Indiana

State Association.—The 58th annual meeting convened at the Hotel Severin January 11 for a three-day meeting, with President G. E. Botkin of Marion in the chair. Among the scientific papers presented were:

J. L. Axby, chief veterinarian.—Report on the work of his department.

Frank Breed, director of the Norden Laboratories, Lincoln, Neb.—Swine Erysipelas.

J. D. Ray, director of the laboratories of the Corn States Serum Company, Omaha, Neb.—The Effects of Heat on the Immunizing Properties of Hog-cholera Virus.

R. R. Donham, chief veterinarian, Purdue University.—Sterility in Cattle.

R. O. Biltz, veterinarian for E. R. Squibb & Sons.—The Control and Treatment of Bovine Mastitis due to *Streptococcus agalactiae* Infection.

Glen L. Dunlap, pathologist, Ashe Lockhart, Inc., Kansas City, Mo.—Suipestifer Infection in Swine.

N. J. Miller, practitioner, Eaton, Colo.—Sheep Diseases and the Sheep Feeding Industry in Colorado, and "A Day's Work in Veterinary Practice."

R. M. Bethke, Ohio Experiment Station (Wooster).—Nutrition in Veterinary Practice, and Its Influence on Farm Animals.

H. W. Jakeman, president of the American Veterinary Medical Association, Boston, Mass.—The Influence of the Association on the Veterinary Profession.

L. P. Doyle, associate pathologist, Purdue University.—Nutritional Diseases and Their Treatment.

Hugh A. Kurn, M. D., Hammond, Ind., specialist.—Comparative Ophthalmology.

E. W. Wood, M.D., Cutter Laboratories, Berkeley, Calif.—Immunological Studies on Hog-cholera Tissue Vaccine.

Carl F. Schlotthauer, veterinarian for the Mayo Clinic, Rochester, Minn.—The Diagnosis and Pathology of Some Nervous Diseases of Animals, and Pre- and Post-operative Care of Animals.

R. E. Nichols, Purdue University.—Some Surgical Diseases of Small Animals.

The session was concluded with a small animal clinic in charge of a committee composed of T. P. White, chairman; R. E. Nichols, E. R. Bartlow, H. M. Bratt and R. J. Hoskins.

The officers elected were: J. S. Tinder, Brooks, *president*; E. S. Hinkle, Centerville, *vice-president*; Chas. C. Dobson, New Augusta, *secretary-treasurer* (re-elected); O. C. Shockley, New Ross, and Walter York, Indianapolis, *directors*.

Frank H. Brown, Indianapolis and T. A. Sigler, Greencastle, were chosen AVMA *delegate* and *alternate*, respectively, to serve until their successors are elected and have qualified.

Iowa

State Association.—The annual meeting held at the Fort Des Moines Hotel, January 27-29, ended 53 years of progress in state society work. The attendance was extraordinary: 507 veterinarians and 200 of their wives; at the banquet, 1,000.

The program was one of wide coverage and of wisely chosen subjects and reporters. The out-of-state speakers and titles of their contributions were:

W. R. Krill, Ohio State University: Large Animal Obstetrics.

E. C. Khuen, Evanston, Ill.: Small Animal Practice.

Adolph Eichhorn, Beltsville, Md.: Calfhood Vaccination, and Encephalomyelitis.

H. E. Kingman, Cheyenne, Wyo.: Sterility and Artificial Ensemination.

W. H. Boynton, Berkeley, Calif.: Anaplasmosis, and Hog-Cholera Tissue Vaccine.

J. D. Ray, Omaha, Nebr.: The Effect of Heat on the Immunizing Property of Hog-Cholera Virus When Used in the Simultaneous Vaccination.

J. P. Leake, M.D., U. S. Public Health Service, Bethesda, Md.: Encephalitis.

H. W. Jakeman, Boston, Mass.: Addresses on the AVMA and Interprofessional Relationships.

W. E. Peterson, Minneapolis, Minn.: Nutritional Disease of Livestock.

The contributors from within the state who presented subjects listed on the official program were:

J. A. Barger, U. S., BAI, Des Moines: "Remarks."

J. Earle Galloway, Drake University, Des Moines: Vitamins.

L. A. Einsentraut, pharmacist, Des Moines: Interprofessional Relationships.

G. R. Fowler, Iowa State College: Local Anesthesia.

H. L. Wilcke, Iowa State College: Management and Feeding of Poultry.

L. A. Bliss, Iowa State College Extension Service: Food for Defense.

Other noteworthy events were radio broadcasts by Drs. Jakeman and Eichhorn, the symposium on the interrelationship of encephalitis in man and animals by Drs. Einsentraut, Jakeman, Leake and Eichhorn; the ladies' entertainments supervised by Mrs. Wayne

Riserof, Des Moines; the unusually well patronized banquet presided over by J. A. Barger, the toastmaster, and the address of Governor G. A. Wilson.

The officers elected were: J. A. Barger, Des Moines, *president-elect*; C. Graham, Wellsburg, *1st vice-president*; John Bryant, Mt. Vernon, *2nd vice-president*; Fred Crow, Iowa City and A. H. Quin, Des Moines, members of the Executive Board. President-elect P. V. Neuzil moved up automatically to the presidential chair.

• • •

At the Holstien-Friesian sale of Don Mitchel, held in Waterloo, December 15, 1941, the average price was \$413.00 a head. Of the 53 head in the herd the highest price paid was \$575.00 for Sunnyside Stylist Jennie producer of 306 lb. of butterfat during 241 days of her first lactation. The importance of the report is the high average price paid for that many cows.

Kentucky

Central Association.—The semi-annual meeting of the Central Kentucky Veterinary Medical Association was a dinner session held January 28 at the Phoenix Hotel in Lexington. The attendance of 40 comprised practitioners, BAI inspectors and workers of the state university. No prepared program was carried out as the meeting followed the one-day conference held annually in connection with Farm and Home Week of the agricultural college and the following day was the opening of the annual meeting of the state association. The session was in fact a testimonial dinner for President-Elect W. W. Dimock of the AVMA who was presented with a gavel as an emblem of esteem from his professional neighbors.

The officers elected for the coming year were Charles E. Hagyard, *president*; Frank Hare, *vice-president*, and E. F. Pile, *secretary-treasurer*.

• • •

State Association.—Secretary F. H. Reister reports an unusually large attendance at the semi-annual meeting held at Lexington, January 29 and 30. Papers were read by Drs. Dimock, Palmer, Fleming, McHargue, and Barnes. Details of a more complete report are promised.

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The Republic Steel Corporation provides fellowships and scholarships for agricultural student of the state university in conjunction with the operation of a 500-acre farm designed to promote the use of more steel in farming (buildings, implements, fences) and to experiment on the preparation of insecticides, fertilizer and weed killers from the by-products of steel manufacturing. The project is con-

ducted with the aid of the state agricultural experiment station.

Louisiana

University Veterinary Conference.—This annual event for 1942 was carried out at the state university February 18-19, together with the business session of the state association, a banquet and a large and small animal clinic. Listed on the program are:

W. A. Aiken, Merrill: Surgery in Cattle, and Common Diseases of Cattle.

H. J. Davis, Louisiana State University: Vitamins in Farm Animals.

W. L. Gates, Clarksdale, Miss.: Equine Practice.

Paul Piercy, Texas A. & M. College: Anaplasmosis, and Liver Flukes.

A. H. Growth, Louisiana State University: Phenothiazine in Veterinary Practice.

John Gillmann, Memphis, Tenn.: Dextrose in Small Animal Practice.

F. F. Neeley presided, President C. B. Hodges, Louisiana State University, delivered the address of welcome and G. A. Young of Lake Charles responded. At the banquet held at the Heidelberg Hotel, W. C. Schofield was toastmaster and H. C. Sander was the principal speaker.

Maine

State Association.—The October meeting was attended by 32 members and visitors. A "Prof. Quiz" feature brought out (1) that there is no way to eliminate barn odors from clothing, or from the family car; (2) that in the absence of possession a veterinarian has no prior lien on an animal treated; (3) that the field test for mastitis (cows) is "not very satisfactory"; (4) that the use of phenothiazine should be encouraged; and (5) that calcium gluconate gives fair results in sweet corn poisoning. Other subjects discussed were feline distemper by F. C. Moore; anaphylactic shock from the use of hemorrhagic septicemia bacterin by C. L. Ryan; the treatment of acetoneemia with calcium gluconate, dextrose and chloral by M. E. Maddocks and P. R. Baird; and the blood test for brucellosis by L. B. Denton of the local BAI laboratory.—*Abstracts from Quarterly News Bulletin, MVMA, edited by Secretary J. F. Witter, Orono, Me.*

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Veterinary Preparedness Committee.—The members of the Committee, H. E. Maddocks, B. J. Cady, J. F. Witter, F. R. Smith and P. R. Baird, held a meeting to organize and go over briefly the veterinary situation of the state. Five locations needing veterinary service were

found. There are but 37 graduate veterinarians in Maine and these must care for 245,000 cattle, 45,000 horses and mules, 48,000 sheep and about 45,000 hogs scattered over an area 400 x 275 miles. The Committee awaits definite instructions from headquarters.

Paul R. Baird, *Chairman*.

Maryland

Maryland is the birthplace of the Star Spangled Banner (Sept. 1814)...the oyster center of the country...leads in tomato growing and packing...ranks first in choice muskrat pelts—conducts an up-to-date veterinary service...contains the main veterinary research laboratories of the U. S., BAI.

Massachusetts

Milk-borne Diseases*.—Only four outbreaks of milk-borne diseases occurred within the state in the last five years. As compared with the five years ending with 1931, the *per capita* consumption of milk increased. The low rate is attributed to pasteurization and milk regulations requiring bacteriological examinations. From 1933 to 1940 there were but two deaths traced to milk-borne diseases. The carrier in these two cases was raw milk.

*Roy F. Feemster. Milk-bourne Diseases in Massachusetts. American Journal of Public Health, Nov., 1941.

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The state S.P.C.A. has formed a committee to cooperate with the Massachusetts Committee of Public Safety to study the protection of animals against air raids.

Michigan

Dean Ward Giltner and B. J. Killham of Michigan State College attended the conference on Procurement and Assignment held in Chicago February 22 under the sponsorship of the Chicago Medical Society.

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Killed in Action.—The greatest of all mundane decorations, "killed in action" was won by former Veterinary Student Romke Steensma of Michigan State College when he was shot down somewhere in Java while serving as a gunner in the Netherlands air force of Dutch East Indies. He was an active member of the AVMA Junior Chapter of MSC, and goes into the records as the first American veterinary casualty of World War II. Steensma was called to the colors of his native country May 10, 1940, when the Nazi cohorts invaded Holland but returned to his classes when unable to obtain transportation. He, however, went to the

East Indies in June, 1941 along with his wife who is also a Michigan State student. His home is in The Hague and his rank in the Dutch reserves was that of second lieutenant.

Minnesota

State Association.—Pending the publication of a more detailed report of the 55th annual convention held at the Curtis Hotel, Minneapolis, January 8-9, 1942, reports arrive to the effect that the coming back of the horse occupied considerable attention. "Triumphant whinny of the horse reverberated through the Curtis Hotel today" is the way the meeting impressed local newspaper men. President H. G. McGinn and his newly elected successor, F. W. Hansen, declared that the horse is rapidly reassuming prominence in American life. To these farseeing experts and connoisseurs of the northwestern agricultural realm, "the horse is as vital in war as in the days of one N. Bonaparte, European fuehrer of the early 19th century."

Among the more important contributors to the scientific program were:

J. E. Freeman, of the BAI, Lincoln, Neb.—Swine Erysipelas; the Serum-Culture Method of Control.

C. B. Jones, Lt. Col. V. C., U. S. Army.—Medical and Surgical Diseases of the Horse.

J. F. Bullard, Purdue University.—Diseases of Cattle.

B. A. Beach, University of Wisconsin.—Diseases of Poultry.

C. E. Cotton, longwhile director of the state livestock sanitary board, was credited with the excellent health condition of Minnesota farm animals.

John S. Dick of Minneapolis and **Carl F. Schlotthauer** of Rochester were elected first and second vice-presidents, respectively, and **W. T. Williams**, director. According to the Association's tradition, E. L. Halver will be the president for 1943. H. C. H. Kernkamp continues as the secretary-treasurer.

Missouri

State Association.—At the meeting held at Columbia, February 10-12, the Association adopted the following resolution bearing upon the war: "Whereas, this Association recognizes the serious state of the nation because of a state of war be it resolved that the members are ready and willing to give full cooperation to the Procurement and Assignment Service in collecting data concerning the veterinary personnel in the state, and to render aid

in whatever manner recommended by that Service."

The meeting rated above the average. Visiting speakers included B. T. Simms, Regional Laboratory, USDA, Auburn, Ala.; Carl F. Schlotthauer, Mayo Foundation, Rochester, Minn.; Cliff Carpenter, Allied Mills, Ft. Wayne, Ind.; and W. H. Riser, Des Moines, Iowa.

There was also a wealth of local talent. Missouri veterinarians are all busy and everyone is patriotic enough to feel their responsibility in the national emergency.

J. L. Wells, *Secretary*.

Nevada

At the annual meeting of the state association held in Reno in February, the following officers were elected: F. W. Fisher, Reno, *president*; W. R. Smith, Las Vegas, *vice-president*; and Warren B. Earl, *secretary*. S. H. Still, inspector-in-charge of the BAI in the state spoke on the status of brucellosis control in Nevada and exhibited in Bureau film entitled "Infectious Equine Anemia." L. R. Vawter of the state university on recent developments in research work. In attendance were G. H. Hansen of the federal fish and wildlife service, W. W. White, M.D., of the state health department, and O. P. Hellor, veterinarian for the CCC. Among those present was George H. Caldwell of Yerington, onetime prominent Illinois practitioner. Edward Record, member of the AVMA Research Council, J. B. Key and H. A. Reagor of Reno and G. T. Woodward and W. K. Shidler of Fallon, were among those present. A dinner session presided over by the retiring president, F. H. Baker of Gardnerville, was held at El Cortez.

New Jersey

State Association.—The 58th annual meeting of the New Jersey Veterinary Medical Association was held at the Hotel Douglas, Newark, on January 15 and 16, 1942. An attendance of 180 marked this meeting as the largest one ever held in the state. At the dinner on Thursday evening Dr. J. Payne Lowe of Passaic was presented with a citation in honor of fifty years of service in the veterinary profession. A code of ethics similar to that of the AVMA was adopted. The officers, all of whom were re-elected, are: J. T. McGrann, *president*; R. A. Hendershott and J. A. S. Millar, *first and second vice-presidents*, respectively; J. B. Engle, *treasurer*; J. R. Porteus, *Secretary*.

The speakers and their subjects were:

H. H. Bair, veterinarian in charge, Rabies Control, N. J. State Department of Health: Rabies Control.

Robert O. Biltz, E. R. Squibb & Sons, New Brunswick: Mastitis Control.

Myron S. Arlein, Angell Memorial Animal Hospital, Boston: Facts and Fallacies About Operating Room Procedures.

R. A. McIntosh, Ontario Veterinary College, Guelph, Ontario: The Significance of Faulty Nutrition in Metabolic Diseases.

Edward Lodholz, Graduate School of Medicine, The Medico-Chirurgical College, University of Pennsylvania: Psychiatry in Domesticated Animals.

Gertrude F. Kinsey, New York City: Diseases of Common Occurrence in Feline Practice.

H. W. Jakeman, Boston, Mass., President, AVMA: The American Veterinary Medical Association.

A. Eichhorn, U. S. Bureau of Animal Industry, Director Animal Disease Station, Beltsville, Md.: Personal Survey of Wartime Animal Disease Control in Great Britain.

R. A. McIntosh, Ontario Veterinary College, Guelph, Ontario: Diseases of the Newborn in the Equine Species.

R. C. Borden, The Borden Company, New York City: Basic Principles of Selling and Leadership as They Affect Professional Relations.

A. H. Craige, Jr., Allied Laboratories, Inc., Indianapolis, Ind.: Urologic Diagnosis.

J. R. Porteus, *Secretary*

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State Association.—A Dairy Day Program was arranged by the state association for State Agricultural Week. Chief Veterinarian R. A. Hendershott was chairman of the Program Committee. President John T. McGrann, presided.

The principal speakers and their subjects were:

A. I. Mann, University of Connecticut: Home Grown Replacements as a Factor in Herd Health.

M. B. Fincher, Cornell University: Calfhood Diseases and Their Control.

Favorable notice to recent meetings has been given in the state newspapers, among them the following clipping from a Sunday issue:

"Other high lights of the meeting were the discussions of 'Food for Freedom' in the defense effort showing that coincident with the better control of tuberculosis, brucellosis and mastitis there has been increased production of highly nutritious meats, eggs, milk and other foods of animal origin which are vital in maintaining health, strength and stamina."

New York

On December 11, 1941, Nobel laureates were guests of honor at a dinner given at the Hotel Roosevelt, New York City. Customarily, the philanthropy of Alfred Nobel, Swedish industrialist for whom the prize was named, is commemorated at Stockholm or Oslo on December 10 of each year. The celebration of 1941 was the fortieth anniversary of the first awards. Eight Nobel laureates were present at the ceremony.

North Carolina

State Association and Veterinary Conference.—At a session which included the fourth annual veterinary conference of the state college held in Raleigh, January 27-30, 1942, the attendance was 100. Resident Secretary J. H. Brown reports the following features of the program:

G. Howard Satterfield, North Carolina State College: A symposium on Nutrition in which the following participated: Phillip Handler, M.D., and W. J. Dann, M.D., Dule Medical School; R. B. Decker, University of Florida; L. B. Bayer, state experiment station, Raleigh; H. C. H. Kernkamp, University Farm, St. Paul, Minn.; and C. R. Donhan, Purdue University, La Fayette, Ind.

H. C. H. Kernkamp, *ibid.*, presented various phases of diseases of swine, mainly noncontagious disorders.

C. R. Donham, *ibid.*, discussed various aspects of cattle practice and conducted a large animal clinic. He stresses mastitis and losses sustained in feeding cattle for market.

Jos. B. Engle, Summit, N. J., showed moving pictures of interesting cases, conducted the small animal clinic and spoke of hospital management.

R. B. Becker, Gainesville, Fla.: Mineral Deficiencies.

Among the other speakers who addressed the meeting were Dean J. W. Harrelson, North Carolina State College; Dean O. I. Schaub, North Carolina School Agriculture; Editor Clarence Poe, of *The Progressive Farmer*, and Wm. Moore, state veterinarian.

Ohio

W. D. Pounden (Colo. '38), has taken the position as assistant to the head of the dairy department of the Ohio Experiment Station at Wooster. Dr. Pounden has just completed a course of graduate work at the University of Wisconsin. The Wooster station is pursuing a

critical study of milk fever, in addition to other projects of importance, relating to the expanding dairy industry of the state.

N. S. Craver, prominent Youngstown practitioner was chosen president-elect of the state association at the annual meeting in January. **E. M. DeTray** of Napoleon and **E. A. Downs** of Mount Syerling were elected vice-presidents. **P. T. Engard** of Marysville was elected to the membership of the Executive Board.

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Director of Health **H. R. Markwith** reported the occurrence of five cases of psittacosis in Cleveland. The source of the infection was not determined.—*Public Health Reports*, Jan. 16, 1942.

Oklahoma



Left to right—**C. R. Walters**, president, Tulsa; **W. F. Hall**, vice president, Idabel; **Ed Pugh**, secretary, Lawton; **George Pugh**, Lawton; attendant at Pugh Brothers Hospital, Lawton. **H. F. Ketchum**, treasurer, is not shown in the picture.

This picture was taken at Lawton in 1914 in front of the Pugh Brothers Hospital and is the personnel of the first veterinary examining board of the state.

s/W. F. Hall, Idabel.

Rhode Island

At a meeting held in Providence, January 9, prominent horsemen under the leadership of **Earl C. Welden, Jr.**, organized a horse association to cooperate with the Office of Civilian Defense to improve the morale and physical fitness of the population. Horse shows, hunter trials and polo games are parts of the program. At the time of the War for Independence, Rhode Island led in the breeding of fine riding horses.

South Carolina

Board of Veterinary Examiners.—At a meeting of the Board held to conduct examinations for licensure held at the Wade Hampton Hotel, Columbia, on January 20, 1942, four applicants presented themselves, namely: George K. Smith, R. L. Dickinson, Julian D. Stith and Otto M. Strock, all graduates of the College of Veterinary Medicine, Alabama Polytechnic Institute, class of 1941, each of whom having taken advantage of student graduate privileges to join the AVMA, brings the total membership of the state up to 52—a membership that places the state association in good standing.

State Association.—The association met the evening of January 20, following the meeting of the State Board of Examiners. President Poole of Clemson College was the guest speaker. Considerable time and discussion was given to preparing the profession for the national emergency in accordance with plans set up by the AVMA office. Secretary-Treasurer R. A. Mays has that matter in hand.

s/W. A. Barnette,
Resident State Secretary.

Texas

A. & M. College Exhibits.—At the meeting of the American Association for the Advancement of Science held at Dallas, December 29 to January 1, the A. & M. College occupied six booths among the scientific exhibits: (1) The importance of vitamin A in animal nutrition; (2) Genetics in sheep and goats; (3) Colchicine in cotton breeding; (4) Cotton-root disease; (4 and 5) Apparatus for measuring the compressibility of gas for extraction of cottonseed oil, and for inspection of ferrous and non-ferrous metals.

Utah

Intermountain Association.—The program of the 15th annual meeting of Intermountain Livestock Sanitary Association was held at the Newhouse Hotel in Salt Lake City, January 8-10, 1942. President A. K. Kuttler, U. S., BAI, Boise, Idaho, in the chair.

The scientific program dealing mainly on veterinary problems of the range country listed the following:

A. N. Carrol, Pueblo, Colo.—The Treatment of Calf Diphtheria with Sulfa Drugs and St. Louis Encephalitis as a Factor in Human Equine Outbreaks.

E. A. Tunnicliff, Montana Veterinary Research Laboratory.—Ovine Posthitis, and Progress of Sheep Disease Research in Montana.

F. F. McKenzie, Utah State Agricultural

College.—Artificial Insemination in Various Classes of Livestock.

E. M. Gildow, Carnation Milk Farms, Seattle, Wash.—Studies on Artificial Insemination at the Carnation Milk Farms, and Observations on Some Reproductive Diseases of Cows.

J. G. Hardenbergh, Executive Secretary, American Veterinary Medical Association, Chicago, Ill.—Bovine Mastitis, Milk Hygiene and its Relation to Public Health, and Brucellosis Control.

A. G. Danks, Cornell University, Ithaca, N. Y.—Diseases of the Foot, and Unusual Clinical Cases.

Glenn Holm, University of Idaho.—Brucellosis in Swine.

W. T. Huffman, U. S. BAI, Salt Lake City.—Equine Infectious Anemia.

W. E. Madsen, Utah Agricultural College.—Synovitis in Turkeys.

At the banquet, President Kuttler officiated as toastmaster and J. G. Hardenbergh spoke on national defense. The practitioners, the state and federal and the research groups each held separate evening sessions in charge, respectively, of Fred Haynie, Richfield, Utah; E. D. Leiby, U. S., BAI, Ogden, Utah and Glenn Holm, Moscow Idaho.

The officers of the year were: A. K. Kuttler (now of Illinois, BAI force), *president*; A. C. Johnson, *first vice-president*; L. R. Vawter, Reno, Nev., *second vice-president*; D. E. Madsen, Ogden, Utah, *secretary-treasurer*, and L. C. Flint, in charge of local arrangements.

The Ladies' Auxillary in charge of President Mrs. J. C. Flint, carried out appropriate entertainments comprising luncheons and a theater party.

Virginia

State Association.—President H. W. Jakeman of the AVMA and Secretary Mark Welsh of the USLSSA of Boston, Mass. and College Park, Md., respectively, addressed the Association at the annual meeting held at the John Marshall Hotel in Richmond, February 4-5, 1942. The officials of these national associations stressed the importance of the food-for-freedom program through the control of farm animal diseases. The number of veterinarians an army of 7,000,000 will require was emphasized inasmuch as the armed forces alone will take from 3,000 to 4,000 of the total personnel of the profession. George C. Faville, dean of Virginia veterinarians, member of the Association for 48 years, was among those present. Other prominent speakers were President H. L. Lyons of Hillsdale, State Veterinarian H. C. Given of

Richmond, B. M. Lyon of Pearl River, N. Y., and E. P. Johnson of the Virginia Polytechnic Institute.

Vermont

State Association.—The annual, 1942, meeting was held at Hotel Vermont, Burlington, January 17. Secretary-Treasurer G. N. Welch reported that the record books of the Association were being still retained by the Federal Grand Jury in Chicago.

R. A. McIntosh, professor of cattle practice, Ontario Veterinary College spoke on the importance of endocrine secretions in reproduction.

L. A. Treat of Binnington addressed the meeting on the subject of parasites of horses.

Herman Philipsen of Brandon, Vermont practitioner for 48 years related some of the strides made in veterinary practice during his long professional life.

Prof. L. W. Dean of the University of Vermont along with Dr. McIntosh was a guest speaker at the banquet.

The association voted to invest \$100.00 of its surplus in Defense Bonds.

Three new members were elected to the membership: N. H. Howlett, BAI inspector-in-charge, Montpelier; J. E. Sawyer, Windsor; and J. R. Dole, Danville. The officers elected were: A. D. Spooner, Barre, *president*; E. M. Power, Bradford, *vice-president*; and D. A. Walker, Morrisville, *2nd vice-president*; G. N. Welch was reelected *secretary-treasurer*.

G. N. Welch, *Secretary*.

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Vermont, onetime French colony and the no-man's-land of the French and Indian Wars, was the first state to join the thirteen original ones. With a population of 360,000 (March 4, 1791) it became the fourteenth state, after having declared itself an independent republic. It has an area of 9,278 square miles. Its farm products are maple sugar, cereal grains and dairy products. Though small, Vermont gave the nation two presidents—Chester A. Arthur and Calvin Coolidge.

Washington

V. C. Paulman, for many years veterinary inspector for the state department of agriculture, resigned to establish himself in practice at Puyallup where he will have charge of meat inspection in two abattoirs as a sideline.

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The western branch of the state association

held its regular monthly meeting at the New Washington Hotel, Seattle, February 10.

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State Association.—The annual, 1941, meeting was held at the Donnelly Hotel, Yakima, October 18. Sixty members attended. Director Arthur E. Cox of the State Department of Agriculture, addressed the meeting. Robert Prior, veterinarian and manager for the Washington State Dairy Producers Commission spoke on the government's request for increasing the production of dairy-products, and called upon all members to do their part. . . . Twenty-three new members were elected to membership. . . . Lyle Nicholson of the state college, and a member of the poultry committee recommended the addition of an extension veterinarian for the college. The following officers for 1942 were elected. F. E. Smith, Seattle, *president*; Marvin R. Hales, Pasco, *vice-president*; and M. O. Barnes, Olympia, *secretary-treasurer*.

Wisconsin

Floyd E. Eads, formerly on the Federal force of James S. Healy, Madison, Wisconsin, engaged in Bang's disease control work, has resigned to take a position in Illinois, and is now located at 307 W. Columbia, Champaign, Illinois.

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S. T. Neubert is now in charge of the Artificial Insemination Ring at Barron, Wis.

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Farm and Home Week.—A number of veterinarians attended the Farm and Home Week given by the state university, February 2-6. . . . The State Veterinary Advisory Board met with Director Ralph Ammon of the Wisconsin Department of Agriculture. This board consists of the veterinary examining board members and members of regional veterinary groups. Those present were J. B. Wilson (president), T. H. Ferguson, G. B. Wigglesworth, and G. F. Van de Sand, of the examining board; and B. L. Lawlor, E. C. Hunke, C. E. Bossewetter and E. C. Nash. Matters pertaining to veterinary welfare were discussed.

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Personals.—A. A. Zinkgraf, practitioner of Pulaski, confined to a hospital at Green Bay because of an auto accident is reported to be recovering. . . . The many Wisconsin friends of R. J. Coffeen, prominent Minnesota practitioner, were grieved to learn of the death of Mrs. Coffeen in January.

U. S. GOVERNMENT

The National Farm and Home Hour, Blue Network, National Broadcasting Company at 12:30 Eastern Standard Time (11:30 CST) is a daily event of general interest to veterinarians. Tune in. One often hears familiar voices.

Pamphlets on coyote and wolf trapping and on bobcat trapping published by the Fish and Wildlife Service, USDI give detailed directions on the control of these predatory animals. They are identified as Circular No. 2 and No. 1, respectively, of that service.

An USDA release quotes Chief John R. Mohler of the Bureau animal Industry as saying "Those of us who view scientific research at close range know it to consist more of hard grind than glamour."

Public Health Reports, weekly periodical of the United States Public Health Service, was first published in 1878. It was authorized by an Act of Congress on April 29 of that year. No medical publication is more widely quoted or contains more useful information on the health of the American people.

Army Veterinary Service

Regular Army.—Captain Bernard F. Trum is relieved from his present assignment and duty at Fort Robinson Quartermaster Depot, Fort Robinson, Nebraska, effective on or about January 21, 1942, and is then assigned to the South Central Remount Area, San Angelo, Texas.

Each of the following named officers is relieved from his present assignment and duty at the station indicated, effective on or about February 4, 1942, and is then assigned to the station specified:

Col. D. B. Leininger is relieved from his present assignment and duty at Fort Bliss, Texas, and is assigned to Fort Ord, Calif.

Col. W. C. Wight is relieved from his present assignment and duty at Fort Ord, Calif., and is assigned to Fort Bliss, Texas.

Lt. Col. N. N. Neate is relieved from his present assignment and duty at Fort Knox, Ky., and is assigned to Camp Jos. T. Robinson, Ark.

Lt. Col. Oscar C. Schwalm is relieved from his present assignment and duty at Camp Jos. T. Robinson, Ark., and is assigned to Fort Benj. Harrison, Ind.

Announcement is made of the following promotions with rank from December 22, 1941:

To Colonel (Temporary).—Lt. Col. William R. Wolfe, Lt. Col. Stanley C. Smock, Lt. Col. Burlin C. Bridges, Lt. Col. James E. Noonan.

Veterinary Corps Reserve.—First Lieut. John R. Collier is relieved from his present assignment and duty at Fort Hayes, Ohio, and is assigned to Patterson Field, Ohio.

First Lieut. Leslie C. Murphy is relieved from his present assignment and duty at Fort Benning, Ga., and is assigned to the New Orleans Port of Embarkation.

First Lieut. George C. Thomas, Jr., is relieved from his present assignment and duty at Camp Claiborne, La., and is assigned to the New Orleans Port of Embarkation.

First Lieut. Ralph A. Maxwell is relieved from his present assignment and duty at Pine Camp, N. Y., effective on or about January 20, 1942, and is then assigned to the Schenectady General Depot, Schenectady, N. Y.

First Lieut. John L. McKittrick is relieved from his present assignment and duty at Headquarters Fifth Corps Area, Fort Hayes, Ohio, and is assigned to the Quartermaster Remount Depot, Fort Robinson, Nebr.

Lt. Col. D. M. Campbell is relieved from his present assignment and duty at Fort Bliss, Tex., effective on or about February 4, 1942, and is assigned to Carlisle Barracks, Pa.

Lt. Col. Ray S. Youman is relieved from his present assignment and duty at Camp Edwards, Mass., effective on or about February 4, 1942, and is assigned to Fifth Corps Area Service Command, Fort Knox, Ky.

Lt. Col. Charles C. Wright is relieved from his present assignment and duty at Fort Bliss, Tex., effective on or about February 4, 1942, and is assigned to the Fourth Corps Area Service Command, Fort McClellan, Ala.

Capt. Duane L. Cady is relieved from his present assignment and duty at Fort Moultrie, Ga., and is assigned to Charleston Port of Embarkation, Charleston, S. C.

The following veterinary Reserve officers have been ordered to extended active duty by the War Department during the month of February and assigned to stations indicated:

First Lieut. Hilton A. Schmidt, Chicago Quartermaster Depot.

Capt. Andy W. Crawford, New Orleans General Depot.

First Lieut. C. A. Woodhouse, Kansas City Quartermaster Depot.

Lt. Col. James G. Catlett, Western Remount Area Headquarters, San Mateo, Calif.

Announcement is made of the following promotions:

To Major.—Capt. Donald R. Morgan, December 24, 1941.

To Captain.—First Lieut. Harold Leo Geick, January 3, 1942; First Lieut. Clayton H. Mickelson, January 17, 1942.

The following officers of the Veterinary Corps Reserve, now on extended active duty at the stations indicated, have been ordered to report to the commanding officer, Chicago Quartermaster Depot, Chicago, Ill., for temporary duty for a period of 30 days for the purpose of pursuing a course of instruction, commencing February 16, 1942, in the inspection of meat, meat-food and dairy products, under the Depot Veterinarian. Upon completion of this duty each of the following officers (first lieutenant unless otherwise indicated) will return to his proper station:

Wm. H. Hervey, Jefferson Barracks, Mo.

R. J. Anderson, Lowry Field, Colo.

Joseph Belinsky, Camp Edwards, Mass.

R. E. Thomsett, Fort Tilden, N. Y.

F. E. McClelland, Fort Monmouth, N. J.

J. Wm. Spranklin, Jr., Hq. Third Corps Area, Baltimore, Md.

Frank J. Davis, Fort Belvoir, Va.

Marvin J. Durrant, Fort Oglethorpe, Ga.

Jos. S. Palen, Camp Tyson, Tenn.

Capt. Glen O. Fly, Fort Benj. Harrison, Ind.

Max G. Badger, Fort Knox, Ky.

Frank O. Gillett, Fort Leavenworth, Kans.

Lt. Col. Simon W. Alford, Fort Leonard Wood, Mo.

Asa L. Walter, Fort Sam Houston, Texas.

Hyman J. Harkavy, Fort Bliss, Texas.

John H. Hensley, Presidio of San Francisco.

Max C. Coons, Los Angeles, Calif.

Roland E. Vollmar, Fort Riley, Kans.

Geo. B. Maichel, Fort Riley, Kans.

John N. McCamich, Fort Bliss, Texas.

John R. Durigg, Camp Shelby, Miss.

Maj. Truman B. Hinkle, Fort Bragg, N. C.

BAI Transfers and Personnel News*

William H. Bassett from Omaha, Neb. (meat inspection) to Omaha, Neb. (virus-serum control).

Edwin R. Jackson, New York, N. Y. to Baltimore, Md. (meat inspection).

Clifton C. Logan, E. Berkshire, Vt. to St. Albans, Vt. (meat inspection).

Clarence H. Pals, Sioux City, Iowa to New York, N. Y. (meat inspection).

Richard E. Pflugrad, E. Berkshire, Vt. to St. Albans, Vt. (in charge meat inspection).

Harvey E. Smith, Nampa, Idaho (in charge meat inspection) to Olympia, Wash. (tuberculosis).

*Parenthesized words indicate the line of duty.

Sebastian N. Studer, Evansville, Ind. to St. Louis, Mo. (meat inspection).

Frank E. Wilhite, Atlanta, Ga. to Jacksonville, Fla. (Brucellosis).

Frank B. Wilkinson, Montgomery, Ala. to Jacksonville, Fla. (tuberculosis).

Carl E. Freeman, junior veterinarian on tuberculosis eradication work at Albuquerque, N. M. died since the last report.

COMING MEETINGS

Midwest Small Animal Association. Hotel Burlington, Burlington, Iowa. March 19, 1942. Wayne H. Riser, secretary, 17th St. at Ingersoll, Des Moines, Iowa.

International Kennel Club of Chicago. International Amphitheatre, Chicago, Ill. March 28-29, 1942. William E. Ogilvie, secretary, 840 Exchange Ave., Chicago, Ill.; J. M. Handley, veterinarian in charge, and J. A. Cameron, veterinarian.

American Animal Hospital Association. 9th annual meeting. Palmer House, Chicago, Ill. April 7-9, 1942. R. E. Ruggles, secretary, 901-19th St., Moline, Ill.

North Carolina State Veterinary Medical Association. Shelby, N. Car. June 25-26, 1942. J. H. Brown, secretary, Tarboro, N. Car.

American Veterinary Medical Association. Chicago, Ill. August 17-20, 1942. J. G. Hardenbergh, executive secretary, 600 S. Michigan Ave., Chicago, Ill.

DEATHS

J. A. Hill (C.V.C. '06), 70 years old, El Paso, Texas, died January 28, 1942 at the Veterans' Hospital in Tucson, Arizona. Dr. Hill served in the Spanish-American war and World War I, locating in El Paso in 1920, and practicing there until his retirement, a few years ago. He joined the AVMA in 1910.

W. H. Fitch (O.V.C. '17), 50 years old, Walcott, Iowa, died on November 29, 1941. He joined the AVMA in 1917.

Don C. Sperry (Iowa '12), Fayette, Iowa, died November 24, 1941. He was the founder of the Fayette County Veterinary Association. He joined the AVMA in 1919.

Charles O. Davis (O.V.C. '07), 57 years old, Parkersburg, West Virginia, died January 29, 1942. Mr. Clark had practiced in Parkersburg for the last 15 years.

M. W. Kreuziger (McK. '10), 52 years old, San Diego, Calif., died February 1, 1942. He joined the AVMA in 1913.



A WAR MESSAGE to ALL EMPLOYERS

★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, materials, and money!

An important part of the billions of dollars required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular pay-day by pay-day investment of the American people can this be done.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in

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The voluntary Pay-Roll Savings Plan (approved by organized labor) provides for regular purchases by your employees of Defense Bonds through voluntary pay-roll allotments. All you do is hold the total funds authorized from pay-roll allotments in a separate account and deliver a Defense Bond to the employee

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You are under no obligation, other than your own interest in the future of your country, to install the Plan after you and your employees have given it consideration.

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U. S. Defense BONDS ★ STAMPS



VETERINARY PREPAREDNESS

Each month in this section, information will be presented on veterinary participation in the nation's war effort.

Procurement and Assignment Service for Physicians, Dentists and Veterinarians

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*Address all communications to
Procurement and Assignment Service
601 Pennsylvania Ave. N. W.
Washington, D. C.*

PREFACE

The Directing Board of the Procurement and Assignment Service, through the Committee on Information, has drawn up the following information regarding the organization and functions of the Procurement and Assignment Service. This pamphlet is designed to answer questions which may arise in the minds of individual physicians, dentists and veterinarians concerning the activities of the Procurement and Assignment Service.

In the appendixes are complete lists of the various cooperating committees and agencies that should be consulted with regard to matters of policy pertaining to their offices.

The corps area officers and the state chairmen in the respective professions will be available for consultation and advice.

For the Directing Board.

S. F. SEELEY, M.D., Major, M.C., U. S. Army,
Executive Officer,
Procurement and Assignment Service.

HISTORY

The Procurement and Assignment Service was authorized by the President on Oc-

tober 30, 1941. The creation of this agency resulted from a recommendation from the Subcommittee on Education to the Health and Medical Committee of the Office of Defense Health and Welfare Services on March 31, 1941. Following a meeting of the Health and Medical Committee on April 28, this recommendation was transmitted to the Committee on Medical Preparedness of the American Medical Association for its consideration. The latter committee presented the recommendation to the House of Delegates of the American Medical Association, which resolved:

That the United States government be urged to plan and arrange immediately for the establishment of a central authority with representatives of the civilian medical profession to be known as the Procurement and Assignment Agency for physicians for the Army, Navy and Public Health Service and for the civilian and industrial needs of the nation.

On October 22, 1941, the Health and Medical Committee named a commission to draft a plan for development of such a service. As a result of the meeting of this commission, it was recommended that an office for procurement and assignment of physicians, dentists and veterinarians should be established, that the office should be a part of the Office of Defense Health and Welfare Services and that the function of the office should be to procure personnel from existing qualified members of the professions concerned. The Procurement and Assignment Service, through the facilities of the Office of Defense Health and Welfare Services, would have available the fiscal budgetary, legal and advisory departments of a well-established governmental agency. The concluding paragraphs of its report are as follows:

For this reason a special commission, ap-

pointed by the Health and Medical Committee of the Office of Defense Health and Welfare Services has made the following recommendations:

1. That an Office of Procurement and Assignment of physicians, dentists and veterinarians be established.

2. That this office shall function as part of the Office of Defense Health and Welfare Services, which is itself a part of the Office for Emergency Management.

3. The function of this office shall be to procure personnel from existing qualified members of the professions concerned. The office shall receive from various governmental and other agencies requests for medical, dental and veterinary personnel. These requests shall indicate the number of men desired, the time during which they must be secured, the qualifications and limitations placed on such personnel. The office must then by appropriate mechanism arrange to secure lists of professional personnel available to meet these requirements, utilizing such existing rosters, public and private, as it may find acceptable. It shall also be authorized to approach such professional personnel as is considered to be available and to use suitable means to stimulate voluntary enrolment.

4. The Office of Procurement and Assignment shall consist of a board of five members, one of whom shall be chairman. This board shall be chosen from members of the medical, dental or veterinary professions and shall not include any salaried employees of the federal government. This board shall function without salary but shall be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of its duties.

5. The board shall appoint an executive secretary who shall serve also as executive officer and who shall be without vote in its deliberations and decisions. He shall serve as a full time employee with salary (to be determined) and with such assistants as the board may determine necessary to carry out its functions.

6. The board shall be authorized to establish such advisory committees and subcommittees as may be necessary. These committees shall represent the various interests concerned, such as medical, dental and veterinary schools, hospitals, Negro physicians and women physicians. Members of such committees shall serve without salary but shall be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of their duties.

7. The board shall also be authorized to request various agencies of the government using medical, dental or veterinary personnel to appoint liaison officers and representatives to advise the board in carrying out its functions.

8. In carrying out its functions the board shall cooperate with such agencies as are now

established under the Selective Service as well as other federal agencies.

On October 30, 1941, the following letter to the President from the Director of Defense Health and Welfare Services was approved by the President and constitutes the authority under which the Procurement and Assignment Service operates:

October 30, 1941.

My Dear Mr. President:

The coordination of the various demands made on the medical, dental and veterinary personnel of the nation and the most efficient utilization of this personnel would seem to require the establishment of a special agency capable of recording the qualified personnel available, of assigning or encouraging enlistment of such personnel in the services where most needed and of giving every qualified physician, dentist and veterinarian an opportunity to enroll himself in some service demanded by the national need.

For these reasons I wish to propose that there be established as one of the principal subdivisions of the Office of Defense Health and Welfare Services an office for the procurement and assignment of physicians, dentists and veterinarians. This office would be known as the Procurement and Assignment Agency.

The functions of the agency would be (1) to receive from various governmental and other agencies requests for medical, dental and veterinary personnel, (2) to secure and maintain lists of professional personnel available, showing detailed qualifications of such personnel, and (3) to utilize all suitable means to stimulate voluntary enrolment, having due regard for the overall public health needs of the nation, including those of governmental agencies and civilian institutions.

The agency would consist of a board of five members, one of whom would serve as chairman. The board would serve without salary but would be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of its duties.

A full time executive officer (with salary to be determined) would be appointed, together with such assistants as would be required to carry out the functions of the Agency.

I recommend that the board be composed of Dr. Frank Lahey, chairman, Dr. James Paullin, Dr. Harvey B. Stone, Dr. Harold S. Diehl and Dr. C. Willard Camalier.

This communication is addressed to you in accordance with provisions contained in paragraph 4 of the Executive Order, dated Sept. 3, 1941, "Establishing the Office of Defense Health and Welfare Services in the Executive Office of the President and Defining Its Functions and Duties," to the effect that the President shall approve the establishment of the principal sub-

divisions of the Office of Defense Health and Welfare Services and the appointment of the heads thereof.

In the event you approve the establishment of the Procurement and Assignment Agency, together with the board membership as recommended, I shall proceed immediately with the creation of the agency and will prepare budget estimates in the amount of approximately \$50,000 for submission to the Budget Bureau to cover the costs of the agency.

In addition I would propose to instruct the Agency to draft legislation which may be necessary to submit to the Congress providing for the involuntary recruitment of medical, dental and veterinary personnel, in the event the exigencies of the national emergency appear to require it.

Sincerely yours,

Approved

FRANKLIN D. ROOSEVELT.

PAUL V. McNUTT,

Director.

This letter was approved by the President, October 30, 1941, and the Procurement and Assignment Service was organized accordingly.

LOCATION OF OFFICES

Central Office.—The accompanying chart shows the organization of the Procurement and Assignment Service. The executive officer is Sam F. Seeley, M.D., Major, M. C., U. S. Army. The central office is located at 601 Pennsylvania Avenue N.W., Washington, D. C. To facilitate correspondence, all communications should be addressed to the central office.

Consultant Office.—A consultant office has been established in the headquarters of the American Medical Association, 535 North Dearborn Street, Chicago, under the supervision of Dr. R. G. Leland, where special information regarding physicians is maintained. Similar information regarding dentists is available at the headquarters of the American Dental Association, 212 East Superior Street, Chicago, and regarding veterinarians at the headquarters of the American Veterinary Medical Association, 600 South Michigan Avenue, Chicago. These facts include those supplied directly to the organizations concerned, the classifications developed by the special committees of the Division of Medical Sciences of the National Research Council and confidential information supplied by other agencies.

Corps Area Committees.—In each of the

nine army corps areas, a committee has been established. Each corps area committee includes a chairman, two physicians chosen from the general medical profession, a dentist chosen from the general dental profession, a representative of medical education, a representative of dental education, a representative chosen from the veterinary profession and a representative of the hospitals. These committees are advisory to the Procurement and Assignment Service in reference to questions relating to personnel and are part of the field organization of the Office of Defense Health and Welfare Services. The chairman of each of these committees acts in a liaison capacity to the corps area surgeons, and representatives of the Office of Civilian Defense, the Selective Service System in the corresponding corps areas. Liaison between the Procurement and Assignment Service and the Bureau of Medicine and Surgery, Navy Department, is maintained directly through the Executive Officer and a representative of the Bureau.

The following is a list of the nine corps area chairmen and the states in each corps area:

First Corps Area.—Chairman, Dr. W. G. Phippen, 31 Chestnut Street, Salem, Mass. States comprising corps area: Connecticut, Maine, New Hampshire, Rhode Island, Massachusetts, Vermont.

Second Corps Area.—Chairman, Dr. A. W. Booth, 222 West Church Street, Elmira, N. Y. States comprising corps area: Delaware, New Jersey, New York.

Third Corps Area.—Chairman, Dr. A. M. Shipley, University Hospital, Baltimore. States comprising corps area: Maryland, Pennsylvania, Virginia, District of Columbia.

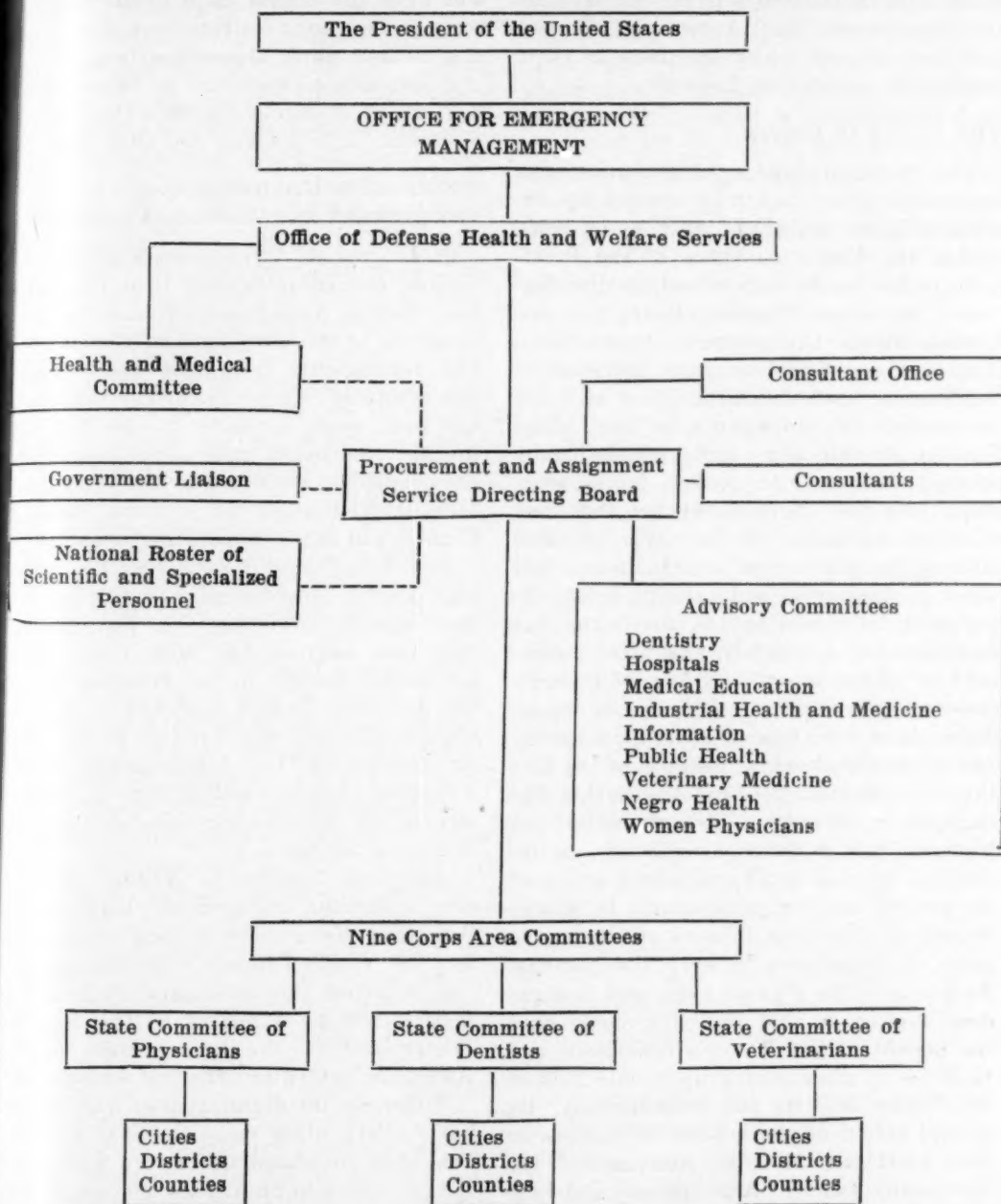
Fourth Corps Area.—Chairman, Dr. Edgar Greene, 478 Peachtree Street N.E., Atlanta, Ga. States comprising corps area: Alabama, Florida, Georgia, Louisiana, Mississippi, Tennessee, South Carolina, North Carolina.

Fifth Corps Area.—Chairman, Dr. E. L. Henderson, 606 S. 4th Street, Louisville, Ky. States comprising corps area: Indiana, Kentucky, Ohio, West Virginia.

Sixth Corps Area.—Chairman, Dr. Charles Phifer, 30 North Michigan Avenue, Chicago. States comprising corps area: Illinois, Wisconsin, Michigan.

Seventh Corps Area.—Chairman, Dr. Roy W. Fouts, 107 S. 17th Street, Omaha. States comprising corps area: Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, North Dakota, Wyoming.

ORGANIZATION OF THE PROCUREMENT AND ASSIGNMENT SERVICE



Eighth Corps Area.—Chairman, Dr. Sam E. Thompson, Kerrville, Texas. States comprising corps area: Arizona, New Mexico, Oklahoma, Texas, Colorado.

Ninth Corps Area.—Chairman, Dr. Charles A. Dukes, 426 17th Street, Oakland, Calif. States comprising corps area: California, Idaho, Montana, Nevada, Oregon, Utah, Washington.

State Chairmen and State Committees.—

The state chairmen and the state committees are advisory to the corps area committees and to the central office. To the state committees and also to the county, district and local committees will be referred especially questions concerning the essential character of such services as a physician, dentist or veterinarian may be rendering, thus de-

termining his availability. They will also familiarize themselves with the functions of the Procurement and Assignment Service and thus be able to advise those in their community concerning its work.

THE NATIONAL ROSTER

The National Roster of Scientific and Specialized Personnel was created by executive action in July of 1940 as an office within the Executive Office of the President to be jointly supervised by the National Resources Planning Board and the United States Civil Service Commission. Two primary functions were assigned to the Roster: first, the formulation of a list as complete as possible of all of the United States scientifically and professionally trained citizens; and, second, the development of proper procedures for the most effective utilization of the skills of these citizens in connection with defense and other governmental and national needs. In pursuance of this directive, the Roster has established a completely analytical punch-card list of the names, locations, and qualifications of the country's specially trained individuals in more than 50 strategic scientific and professional fields. Because of the fact that the American Medical Association was engaged in developing its own roster, the National Roster did not undertake to include any but a small specialized group of the general medical profession. It became necessary, therefore, to work out an agreement of coöperation between the National Roster and the Procurement and Assignment Service so that the latter could have the benefit of the Roster's experience and facilities in maintaining up-to-date lists of physicians, dentists and veterinarians. By special action of the boards of trustees of the American Medical Association, the American Dental Association and the American Veterinary Medical Association, all punch-card files in the possession of these associations were made available to the National Roster.

By these joint efforts, the Procurement and Assignment Service will have available in the National Roster at Washington complete records of all material submitted by

the professions. The professions in turn will have the benefit of material collected through the roster for their own punch-card files at their national headquarters.

A consultant committee to the National Roster for medicine includes Drs. Morris Fishbein, R. G. Leland, and Olin West.

INFORMATION UTILIZED IN THE PROCUREMENT AND ASSIGNMENT SERVICE

Questionnaire.—American Medical Association: Beginning in June 1940, the American Medical Association circulated a questionnaire to the physicians of the country. The information from this questionnaire was tabulated in a punch-card system which has been made available to the National Roster. Additional information concerning physicians was developed by the Division of Medical Sciences of the National Research Council and other coöperating agencies.

American Dental Association: The American Dental Association has circulated a questionnaire to all dentists. The information thus secured has been placed in a punch-card system in the headquarters of the American Dental Association and also made available to the National Roster. The information in the headquarters of the American Dental Association is supplemented by information secured from coöperating agencies.

American Veterinary Medical Association: Through coöperation between the American Veterinary Medical Association and the National Roster, a punch-card system covering the veterinary medical profession will be available in the National Roster and in the headquarters of the American Veterinary Medical Association.

Following the declaration of war, December 8, 1941, other questionnaires were immediately circulated with a view to securing lists of names of physicians who would offer their services for immediate utilization in the emergency. Since the supply of dentists and veterinarians was at this time adequate to meet the needs of the armed forces, additional enrolment forms were circulated only to physicians. As a result of this procedure the immediate needs of the armed forces were satisfied.

SPECIAL ENROLMENT FORM AND QUESTIONNAIRE FOR PROCUREMENT AND ASSIGNMENT SERVICE

The Procurement and Assignment Service, coöperating with the National Roster of Scientific and Specialized Personnel, has prepared special questionnaires for circulation to every physician, dentist and veterinarian in the United States. This questionnaire will come directly to all physicians, dentists and veterinarians as soon as possible after the National Registration on February 16, 1942. *Every physician, dentist and veterinarian, regardless of age, sex, physical condition, citizenship or employment, should fill out and return the enrolment form and the questionnaire.* Those physicians, dentists and veterinarians who have been commissioned in any United States service previous to the receipt of the enrolment form and questionnaire should so indicate under the heading "remarks" on the enrolment form.

The original questionnaire and enrolment forms previously circulated by the American Medical Association, the American Dental Association and the American Veterinary Medical Association are being utilized to meet requisitions from the armed services and other agencies, until the National Roster is complete and the Procurement and Assignment Service is working routinely. The additional information secured by the special questionnaire now to be described will bring up to date the facts necessary to place each physician, dentist and veterinarian in the work for which he is best qualified.

Roster Questionnaire.—The questionnaire, as developed, includes space on which the physician, dentist or veterinarian will supply the usual data regarding name, address, date and place of birth, citizenship, marital status, race and sex, school of graduation, previous military service in the United States or in the armed forces of other countries, membership in the reserve corps or commissions in any branch of government service. Any additional information regarding special aptitudes, such as knowledge of aviation, radio or cryptanalysis, which might be of value, knowledge

of foreign languages and foreign travel will also be included. Again, it should be emphasized, this information is sought to supplement information previously supplied on questionnaires. It is recognized that the status of any physician, dentist or veterinarian may have changed materially since the time previous questionnaires were submitted. The new questionnaire will also be tabulated in a special punch-card system which will be coördinated with the punch-card systems previously mentioned.

In the new questionnaire, opportunity is also given to state in detail appointments held in various local, industrial, state or governmental agencies, in civil practice, and in education and research. Specialization is recognized by appropriate designations which coördinate with certification of specialists by the certifying boards and also with appointments on the staffs of hospitals and other indications of special practice.

The method of practice, whether individual, in partnership or in groups is indicated. Finally an opportunity is given to every physician, dentist and veterinarian to indicate his preference as to the type of service which he will be capable of rendering to the United States during the war.

The Enrolment Form.—On the enrolment form which comes with the questionnaire the physician, dentist or veterinarian voluntarily enrolls himself with the Procurement and Assignment Service. He indicates his first, second, third and fourth preferences of the military, governmental, industrial or civil categories that may require his assistance.

Announcement will be made repeatedly in medical, dental and veterinary medical publications of the time when the circulation of the enrolment form and the questionnaire begins. When you receive your enrolment form and questionnaire, please act promptly. Those who fail to receive an enrolment form and questionnaire are requested to write to the National Roster of Scientific and Specialized Personnel, 916 G Street N.W., Washington, D. C., within six weeks after announcement has been made that the circulation has begun.

CERTIFICATE AND INSIGNIA

Physicians, dentists and veterinarians who enroll with the Procurement and Assignment Service will receive a numbered certificate indicating that they have made themselves available and will be privileged to wear insignia indicating that such enrolment has been made.

PROCEDURE TO MEET PRESENT NEEDS

The present Army and Navy needs are for physicians under 36 years of age. Those under 36 desiring immediate commission may write now to the Procurement and Assignment Service, 601 Pennsylvania Avenue, N.W., Washington, D. C. Their letters will be treated as applications and those who are qualified will receive proper application forms with view of commission in the Army or Navy. All physicians over 36 and all dentists and veterinarians should await the receipt of the enrolment forms.

METHODS OF ACTION OF THE PROCUREMENT AND ASSIGNMENT SERVICE

By authority of the President, the Procurement and Assignment Service receives requests for personnel from the following governmental agencies:

MEDICAL

United States Army Medical Corps.
United States Navy Medical Corps.
United States Public Health Service.
United States Veterans Administration.
United States Civil Service Agencies.
St. Elizabeth's Hospital (Washington, D. C.),
resident staff and interns only.
United States Indian Service.
Panama Canal Service.
Office of Civilian Defense (full time).

DENTAL

United States Army Dental Corps.
United States Navy Dental Corps.
United States Public Health Service.
United States Veterans Administration.
United States Indian Service.
Panama Canal Service.
Office of Civilian Defense.

VETERINARY

United States Army Veterinary Corps.
United States Navy Hospital Corps Specialists.
United States Public Health Service.
United States Bureau of Animal Industry.

Federal Extension Service.

State Extension Service.

United States Department of Agriculture
Marketing Service.

War Department (Federal Civil Service
Status—not Army).

Federal Agricultural Experiment Stations.

The Procurement and Assignment Service is also charged with the stimulation of voluntary enrolment, having due regard for the over-all health needs of the nation, including the personnel of civilian institutions.

When a request is received from a federal agency for medical, dental or veterinary personnel, the names of those who are qualified to meet the specifications established by the requisitioning agency, who are available and who have indicated by enrolling with the Procurement and Assignment Service, their willingness to apply for a commission or employment are supplied by the National Roster, utilizing the punch-card system previously described. These names are arranged in lists by states. A copy of each list is forwarded to the Consultant Office of physicians, dentists or veterinarians respectively, where each is made more accurate by the elimination of the names of those who do not qualify in view of the special information held in the Consultant Office. These lists are then referred to the state chairmen, who make a decision as to the immediate availability of the physicians, dentists or veterinarians concerned. Such a step is necessary because the availability of the individual may have changed in the period between the return of the official questionnaire in March 1942 and the time when the physician, dentist or veterinarian is notified of the need for his services. The lists are then forwarded by the state chairmen to the Procurement and Assignment Service in Washington.

From these lists the central office obtains the names of those individuals who have thus been found qualified and available.

PHYSICIANS, DENTISTS OR VETERINARIANS FOR THE UNITED STATES ARMY MEDICAL DEPARTMENT

The procedure with reference to supplying personnel to the United States Army

Medical Department is governed by the following letter of instruction sent out by the Adjutant General's Office to all corps area and department commanders on January 21, 1942:

WAR DEPARTMENT
The Adjutant General's Office
Washington

January 21, 1942

Subject: Procurement of Officers for Medical Department, Army of the United States.

To: All Corps Area and Department Commanders.

1. Letter from this office dated Feb. 3, 1941, file AG 381 (8-13-40) R-A, Subject: "Assistance of the American Medical Association in the classification and procurement of physicians for military service," is rescinded.

2. There has been established under the Office for Emergency Management, Office of Defense Health and Welfare Services, a Procurement and Assignment Service to coordinate the procurement of physicians, dentists and veterinarians for all governmental, industrial and civilian requirements.

3. In order to expedite appointments in the Medical Corps, Dental Corps and Veterinary Corps, Army of the United States, the following procedure will govern the processing of all applications:

(a) All individual inquiries for information concerning a commission or offers to serve as a medical, dental or veterinary officer should be acknowledged by the headquarters receiving the communication and the communication itself forwarded by indorsement to the Executive Officer, Procurement and Assignment Service, Office of Defense Health and Welfare Services, Social Security Building, Washington, D. C.

(b) The Procurement and Assignment Service will supply to individual applicants who are eligible and qualified for appointment the required forms (WD AGO Form No. 170, "Application for Appointment and Statement of Preferences for Reserve Officers," in duplicate, and WD AGO Form No. 178 and 178-2, both in duplicate) together with a request on the surgeon of the nearest Army post for a final type physical examination. Each request for final type physical examination authorized by the Procurement and Assignment Service will be honored by surgeons of Army posts. Application forms and supporting papers, except the report of physical examination, will be returned by the applicant to the Procurement and Assignment Service; the report of physical examination (WD AGO Form No. 63) will be forwarded by the surgeon of the station at which the examination was conducted, direct to the Surgeon General.

(c) The completed applications and supporting papers, except report of physical examina-

tion, will be transmitted by the Procurement and Assignment Service to the Surgeon General together with a statement by that service derived from its files and regarding eligibility of the applicant for appointment in the Medical, Dental and Veterinary Corps, Army of the United States, as prescribed by current Army regulations. The Procurement and Assignment Service will also furnish the Surgeon General with the professional classification and evaluation of the applicant as determined from the recent nationwide survey made by the Committee on Medical Preparedness of the American Medical Association.

(d) The Surgeon General will forward such completed applications to the Adjutant General as prescribed in paragraph 10 (4), Army Regulations No. 605-10, and inform the Procurement and Assignment Service of action recommended.

4. No change in the present procedure for the appointment of graduates of medical units of the Reserve Officers' Training Corps in the Medical Corps Reserve or for appointment in the Army of the United States of physicians and dentists for affiliated units, of junior and senior students in medical schools in the Medical Administrative Corps, Army of the United States, or of graduates of such schools who are to be appointed in the Medical Corps, Army of the United States, on graduation.

5. When the applications for appointment have been approved the Adjutant General will notify the applicant direct of his appointment with instructions as to proper completion of oath of office and finger print card and the return of such forms direct to the Adjutant General. When the oath of office has been received by the Adjutant General, the Surgeon General and the Executive Officer, Procurement and Assignment Service of the Office of Defense Health and Welfare Services, Office for Emergency Management, Washington, D. C., will be notified.

By order of the Secretary of War.

(Note. Address now 601 Pennsylvania Avenue, N.W., Washington, D. C.)

In summary, the procedure is as follows:

1. The Surgeon General requisitions needed personnel from the central office of the Procurement and Assignment Service.

2. The National Roster prepares an appropriate list of names from the National Roster of Scientific and Specialized Personnel.

3. The National Roster sets aside the cards from the file of those available.

4. This list is forwarded to the Consultant Office, Procurement and Assignment Service.

5. The Consultant Office forwards the names to the chairmen of relevant state

committees of the Procurement and Assignment Service.

6. These chairmen forward to the central office the lists they received, with names of unavailable (essential) persons indicated.

7. The central office mails application forms and authority for physical examination to the qualified and available proposed applicants.

8. Each applicant applies for "final type" physical examination at the nearest Army post.

9. The examiner sends the report to the Surgeon General's Office.

10. The applicant returns his completed application blank and supporting papers direct to the central office of the Procurement and Assignment Service.

11. The central office forwards the application form and the supporting papers direct to the Surgeon General.

12. The Surgeon General's Office joins the completed application blank, supporting papers and the corresponding report of physical examination.

13. The Surgeon General's Office determines whether or not to recommend the applicant to the Adjutant General on the basis of physical and professional qualifications.

14. The Adjutant General notifies the applicant that he has or has not been appointed.

15. The central office of the Procurement and Assignment Service is notified whether the applicant has been, or has not been, appointed.

16. The names of those not commissioned are again placed in the file of the National Roster so that the persons affected may be available for other service.

NOTE.—After the applicant has sent his application form and supporting papers to the Central Office of the Procurement and Assignment Service, he may expect his further correspondence to be carried on with the Surgeon General's Office or the Adjutant General's Office.

PROVISION OF PHYSICIANS AND DENTISTS FOR THE UNITED STATES NAVY MEDICAL AND DENTAL CORPS

When a request is received from the United States Navy Medical or Dental Corps for personnel, the same procedure will be followed in securing lists of names

as has already been described in the previous section regarding the provision of personnel for the Army. The lists of names received from the state chairman will then be forwarded by the Procurement and Assignment Service to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C. The Bureau of Medicine and Surgery will then conduct negotiations with the physicians and dentists concerned through the commandants of their respective naval districts. Should a physician or dentist apply directly to a naval commandant for commission in the United States Naval Medical or Dental Corps, the procedure outlined in the following letter from the Bureau of Medicine and Surgery to the commandants of all naval districts, dated February 3, 1942, prevails:

February 3, 1942.

From: The Chief of the Bureau of Medicine and Surgery.

To: The Commandant, All Naval Districts.

Subject: Status of Procurement and Assignment Service for Physicians, Dentists and Veterinarians in connection with recruitment of medical and dental officers for the U. S. Naval Reserve.

1. The Secretary of the Navy has approved the recommendations of the Chief of the Bureau of Medicine and Surgery whereby the services of the "Procurement and Assignment Service, of the Defense Health and Welfare Services," an organization recently created by the President, may be utilized by the Navy in facilitating the recruitment of medical and dental officers for the U. S. Naval Reserve.

2. The primary function of the above mentioned service as pertains to the Navy is to furnish information which indicates certain applicants for appointment in the Medical and Dental Corps of the Naval Reserve either do or do not occupy positions in civil life which are considered essential to the national defense, to the proper functioning of medical and dental schools or whose acceptance of appointments in the Naval Reserve would jeopardize the health and welfare of a local community, such as removing the only qualified orthopedic surgeon from a community composed practically entirely of miners or workers in a factory producing materials essential to the government.

The furnishing of such information to the commandants, before investigation of an applicant, would be of distinct advantage in that the number of investigations would be materially reduced and, in the case of applicants considered essential or holding civilian appointments

connected with national defense, need not be accomplished.

3. In this connection, the following procedure is suggested with the request that it be executed by the District Medical Officer on all applications received after Feb. 16, 1942:

(a) Whenever a physician or dentist makes application for appointment, four copies of the enclosed form are to be immediately filled out and the original and two copies forwarded to the Bureau of Medicine and Surgery. It is desired these forms be forwarded when the first contact is made in any given case, without waiting for the applicant to return his completed application.

(b) The Bureau of Medicine and Surgery will retain one copy and send the original and one copy to the Executive Secretary of the Procurement and Assignment Service.

(c) When the Executive Secretary of the Procurement and Assignment Service has placed his endorsement thereon, he will return both copies to the commandant concerned.

(d) If the candidate is not cleared, both copies should be forwarded by the commandant to the Bureau of Medicine and Surgery and the candidate informed by the commandant his application cannot be accepted in view of the action of the Procurement and Assignment Service. The Bureau of Medicine and Surgery will make the second endorsement, retain the original and forward the copy to the Executive Officer of the Procurement and Assignment Service.

(e) If the candidate is cleared, both the original and the copy of the form should be forwarded to the Bureau of Navigation with the application. After final action is taken the Bureau of Medicine and Surgery will make the second endorsement, retain the original and forward the copy to the Executive Officer of the Procurement and Assignment Service.

(f) About fifty copies of the form adaptable for this purpose are enclosed to serve as a sample of others to be mimeographed or printed locally.

ROSS T. MCINTIRE.

In summary, the procedures for Navy procurement are as follows:

1. The Bureau of Medicine and Surgery requisitions personnel from the central office of the Procurement and Assignment Service.

2. An appropriate list of names is prepared from the National Roster of Scientific and Specialized Personnel.

3. The National Roster sets aside the cards bearing these names from the file of those available.

4. The list is forwarded to the Consult-

ant Office, Procurement and Assignment Service.

5. The Consultant Office forwards the names to the chairmen of relevant state committees of the Procurement and Assignment Service.

6. These chairmen forward to the central office the lists they received, with names of unavailable (essential) persons indicated.

7. The central office forwards the names of qualified and available persons to the Bureau of Medicine and Surgery.

8. The Bureau of Medicine and Surgery conducts the subsequent negotiations with the proposed applicants.

9. The Bureau of Medicine and Surgery notifies the central office of the Procurement and Assignment Service which applicants have been and which have not been appointed.

10. The names of those not commissioned are again placed in the file of the National Roster, so that the persons affected may be available for other services.

When an applicant applies directly to any Army installation for commission in the Army Medical or Dental or Veterinary Corps, he is referred to the Procurement and Assignment Service. When an applicant applies to any Naval Commandant for commission in the U. S. Medical or Dental Corps, his application is sent to the Bureau of Medicine and Surgery and such names are cleared through the Procurement and Assignment Service before the commissions are granted.

UNITED STATES PUBLIC HEALTH SERVICE

The Surgeon General of the United States Public Health Service has issued the following circular to all district directors and medical officers in charge concerning new appointment procedure for physicians and dentists:

February 14, 1942.

1. The Procurement and Assignment Service within the Office of Defense Health and Welfare Services has the responsibility for assisting in the procurement and assignment of physicians and dentists in such manner as to best serve the over-all health and medical needs of the country. It is essential that the personnel policy of the Public Health Service be consistent

with the major purposes of the Procurement and Assignment Service.

2. It is desired that applications be solicited from qualified physicians and dentists for commission in the reserve corps of the U. S. Public Health Service. The expansion of the reserve corps of the Public Health Service is necessary to serve two major purposes:

(a) The creation of a pool of qualified public health personnel to safeguard essential civilian health services and at the same time to be available for immediate, though temporary, active duty in the event of some major public health emergency.

(b) The procurement of sufficient numbers of qualified physicians and dentists to enable the Public Health Service to carry on its normal and war-time activities.

3. In order to serve these two major purposes, it will be necessary to recruit into the reserve of the Public Health Service physicians and dentists who come within the two following categories:

(a) Those who are now engaged in public health work and who by reason of special training and experience occupy strategic positions in their present civilian capacities. Such personnel would be expected to remain on inactive status with the Public Health Service, except in the event of a major disaster, in which case they would be subject to immediate, though temporary, active duty.

(b) Those who are professionally qualified and also available for immediate active duty in the Public Health Service for such periods of time as the exigencies of the service may determine.

4. Applications from physicians and dentists relating to commissions in the reserve of the Public Health Service will be processed in the following manner: On receipt of an application by the office of the Surgeon General, the application forms and all supporting papers, including the report of physical examination, will be transmitted with a definite recommendation of the Surgeon General to the Procurement and Assignment Service. The Procurement and Assignment Service will in turn certify to the Surgeon General as to the availability of the individual for appointment. In the case of public health personnel occupying strategic positions in civilian posts, the criterion of availability for commission would rest largely upon the fact that the individual occupies a strategic position, and therefore should remain as long as practicable on an inactive status. In the case of personnel to be called to immediate active duty, the criterion of availability would be based upon the ability of the community to spare the services of the individual. Upon receipt from the Procurement and Assignment Service of notice of clearance, indicating that the applicant is available for a commission in the reserve of the Public Health Service, the

appointment will be completed in the usual manner.

5. The above procedure does not apply to the recruiting of individuals for the regular corps of the Public Health Service, or to the appointment of interns or doctors certified by the Civil Service Commission, or to the appointment of sanitary engineer officers in the reserve.

6. When the Public Health Service is without acceptable applications from physicians and dentists for filling vacancies, the Surgeon General will request the Procurement and Assignment Service for the names and qualifications of persons available to fill such vacancies. When decision has been reached as to the selection or nonselection of such persons, the Surgeon General will advise the Procurement and Assignment Service.

7. The Procurement and Assignment Service has given its endorsement to the procedure outlined above.

THOMAS PARRAN,
Surgeon General.

Approved:

PAUL V. McNUTT,
Administrator.

UNITED STATES CIVIL SERVICE COMMISSION

In accordance with the recommendation of the Medical Director, the United States Civil Service Commission has approved a procedure in connection with the recruitment of qualified persons whereby the Commission will cooperate with the Procurement and Assignment Service and deal directly with this service in its recruitment program.

1. The necessary application forms, all properly executed, are to be filed by the applicant with the United States Civil Service Commission at Washington, D. C. Information concerning necessary qualifications is to be obtained from the announcement of the examination. Application forms and announcements may be obtained from the United States Civil Service Commission, Washington, D. C.

2. Applications received under announcements of examinations for physicians, dentists and veterinarians will be rated by the United States Civil Service Commission.

3. The names of those applicants who have received an eligible rating will be submitted to the Procurement and Assignment Service, with the view of determining whether or not such applicants are essential in their present positions and localities.

4. The names of those persons who have been designated by the Procurement and Assignment Service as being essential in their present positions and localities will not be certified and such persons will be notified by the United States Civil Service Commission that

they cannot be certified in view of the action taken by the Procurement and Assignment Service.

5. The names of those persons who have been designated as nonessential will be certified in routine manner to fill the personnel needs of the various government agencies under civil service rules and regulations.

MEDICAL, DENTAL AND VETERINARY EDUCATION

To meet the needs of the nation for a continuing supply of trained medical, dental and veterinary personnel for the armed forces and for civilian needs, and to maintain the standards of education which have prevailed in these fields, the medical, dental and veterinary professions initiated an effort as far back as 1940 to provide for deferment of students in qualified medical, dental and veterinary schools from induction under the provisions of the Selective Service acts. Through the coöperation of the Director of Selective Service, the following memorandums now prevail:

Deferments of Professional Students and Instructors.—The Selective Service System, Washington, D. C., on January 12, 1942, issued the following supplement to Memoranda (I-62), (I-91), (I-99) and (I-150) Occupational Deferment of Engineering, Chemical, Physics, Medical, Dental Students and Instructors (III):

The attention of local boards is again invited to the necessity of seriously considering for deferment students in certain specialized professional fields in which dangerously low levels of manpower are found to exist. This memorandum is in addition to and does not rescind those previously issued which apply to students in other critical fields.

Subsequent to the declaration of war, local Selective Service agencies have in many instances proceeded to classify registrants without regard to the fact that they are in training or preparation for activities the maintenance of which is essential to the national health, safety or interest and war production. This is particularly true in cases of engineering, chemical, physics, medical and dental students.

Admittedly there is an overlapping of the military and civilian requirements of a nation at war; however, it must be borne in mind that the one is dependent on the other. It is estimated that the expanding army will eventually require doctors and dentists in numbers heretofore unknown. They will not be available if those students who show reasonable promise

of becoming doctors and dentists are inducted prior to becoming eligible for commissions.

War industries are undergoing a hitherto unknown expansion. Aeronautical, civil, electrical, chemical, mining, metallurgical, mechanical and radio engineers together with physicists and chemists are essential to insure a sufficient flow of material for the armed forces, and industry must look to the engineering, chemical and physics students now in training to meet their present and future requirements.

It is equally important that instructors in these fields be seriously considered for occupational deferment. Shortages of qualified instructors are known to exist. The educational institution employing the instructor should be requested to file DSS Form 42A in all cases in which deferment is sought.

In considering student deferment cases, certain local boards are requiring the execution of DSS Form 42A in addition to the affidavit of the college or university contained in Bulletin No. 10 issued by the American Council on Education. DSS Form 42A should not be required when the American Council on Education affidavit has been submitted.

Local boards will be informed when the manpower requirements necessary to the national health, safety or interest and war production become static. Until such time, the policy set forth in the Memoranda to All State Directors I-62, I-91, I-99 and I-150 remains in force.

LEWIS B. HERSHEY, Director.

All students holding letters of acceptance from deans for admission to dental and veterinary colleges and all students of good academic standing in these colleges should present letters or have letters presented for them by their deans to their local boards of the Selective Service System. All pre-medical students who have letters of acceptance from deans for admission to medical colleges but who have not actually matriculated should present these letters. This step is necessary in order to be considered for deferment in class II-A as a medical, dental or veterinary student. If local boards classify such students in class I-A, they should immediately notify their deans and, if necessary, exercise rights of appeal to their local boards of appeals. If, after exhausting such right of appeal, further consideration is necessary, request for further appeal may be made to the state directors and if necessary to the national director of the Selective Service System. These officers have the power to take appeals to the President.

On January 28, 1942, the following memorandum (I-363) was released by the Director of Selective Service to all state directors of the Selective Service System.

OCCUPATIONAL DEFERMENTS OF MEDICAL DOCTORS, DENTISTS AND DOCTORS OF VETERINARY MEDICINE

Information previously distributed by this headquarters clearly indicates an overall shortage of medical doctors, dentists and doctors of veterinary medicine in the nation. Since war was declared, the shortage of these professional men has become acute. It is now manifest that every qualified doctor, dentist and veterinarian must serve where he can render the greatest professional service to the nation.

In order to accomplish this purpose, the President, by Executive Order, has formed the Procurement and Assignment Service, under the Office of Defense Health and Welfare Services. This Service was formed primarily for the purpose of gathering and making available information with respect to the supply of qualified practitioners in the fields of medicine, dentistry and veterinary medicine, with a view of securing the most effective allocation of medical manpower as indicated by the requirements of the armed forces, civilian needs and industrial medicine.

To work with the headquarters of this Service in Washington, there is being organized a committee for each Corps Area in the Continental United States. Each committee will consist of five doctors, two dentists and one veterinarian. The committees have been accepted as advisers to the nine Corps Area Surgeons, to the Naval District Surgeons and to the Regional Medical Officers of the Office of Civilian Defense and will operate not only through the subdivisions of the medical, dental and veterinary associations but also with the profession at large in securing information and giving advice.

When considering the classification of any registrant who is a qualified medical doctor, dentist, or doctor of veterinary medicine, the Director of Selective Service desires that local boards, through the State Director, shall consult the Procurement and Assignment Committee of the Corps Area for information as to the availability of qualified medical doctors, dentists and doctors of veterinary medicine in the community. This information shall be considered by the local board in determining the registrant's classification. The Executive Order referred to in no way affects the authority of the Selective Service System to classify registrants. The procedure has been established for the purpose of making such information available to local boards.

For the convenience of the State Director and the local boards, the names and addresses of

the Chairmen of the Nine Corps area committees of the Procurement and Assignment Service are listed:

First Corps Area: Dr. W. G. Phippen, Salem, Mass.

Second Corps Area: Dr. A. W. Booth, Elmira, N. Y.

Third Corps Area: Dr. A. M. Shipley, Baltimore, Md.

Fourth Corps Area: Dr. Edgar Greene, Atlanta, Ga.

Fifth Corps Area: Dr. E. L. Henderson, Louisville, Ky.

Sixth Corps Area: Dr. Charles H. Phifer, Chicago, Ill.

Seventh Corps Area: Dr. Roy W. Fouts, Omaha, Neb.

Eighth Corps Area: Dr. Sam E. Thompson, Kerrville, Texas.

Ninth Corps Area: Dr. Charles A. Dukes, Oakland, Calif.

LEWIS B. HERSHEY, Director.

DEFERMENT FOR STUDENTS

The Secretary of the Navy recently approved a change in Navy regulations whereby it is now possible for persons who have been accepted for entrance in the next entering class and all medical students in class A medical colleges and approved dental colleges to be appointed in the United States Naval Reserve with the commission Ensign H-V (P), provided they meet the physical and other requirements for such appointment. It should be noted that this applies not only for persons holding letters of acceptance and freshmen and sophomore students in these medical and dental schools but also juniors and seniors.

The Secretary of War has recently approved a change in Army Regulations which authorizes the commission as Second Lieutenant, Medical Administrative Corps, Army of the United States, of all students in class A medical colleges and to those persons who have matriculated in these colleges, providing they meet the physical and other requirements for such appointment. It should be noted that this opportunity includes freshmen and sophomores as well as juniors and seniors.

For commission in the Navy, application forms may be obtained from the dean's office or from some one designated by him, or from the commandant of the naval district in which the applicant resides. Fur-

ther information may be obtained from the office of the commandant of any naval district.

For commission in the Army, applications should be made through the office of the dean to the corps area surgeon of the corps area in which the applicant resides.

Students of the Medical Reserve Officers' training Corps should continue as before, with a view of obtaining commissions as First Lieutenant, Medical Reserve Corps, on graduation.

Students who hold commissions come under the jurisdiction of the Army and Navy authorities and are not subject to induction under the Selective Service acts. The Army and Navy authorities will defer calling these officers to active duty until they have completed their medical education.

All students who are disqualified physically for commissions should apply for deferment in accordance with the instructions already referred to.

RECENT GRADUATES

After successful completion of his medical college course every individual holding commission as Second Lieutenant, Medical Administrative Corps, Army of the United States, should make immediate application to the Adjutant General, United States Army, Washington, D. C., for appointment as First Lieutenant, Medical or Dental Corps, Army of the United States. Every individual holding commission as Ensign H-V (P), U. S. Naval Reserve, should make immediate application to the commandant of his naval district for commission as Lieutenant (j. g.), Medical or Dental Corps Reserve, U. S. Navy. If appointment is desired in the grade of Lieutenant (j. g.) in the regular Medical Corps or Dental Corps of the U. S. Navy, application should be made to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

The Public Health Service contacts senior and junior medical students for the purpose of interesting the students in applying for positions as interns, following the successful completion of the school year. In addition the students that are accepted are

offered commissions in the reserve, to be inactive during the period of their internship and to become active following the successful completion of their internship.

TWELVE-MONTH INTERNSHIPS

All interns should apply for commissions as First Lieutenant, Medical or Dental Corps, Army of the United States, or as Lieutenant (j. g.), United States Navy or Naval Reserve. After completion of twelve months of internship, except in rare instances in which the necessity of continuation as a member of the staff or as a resident can be defended by the institution, all who are physically fit may be required to enter military service. Those commissioned may then expect to enter military service in their professional capacity as medical or dental officers.

HOSPITAL STAFF MEMBERS

Interns with more than twelve months of internship, assistant residents, fellows, residents, junior staff members and staff members under the age of 45 fall within the provisions of the Selective Service acts.

All such men holding Army commissions are subject to call at any time. Temporary deferment is possible if an application made by the institution to the Adjutant General of the United States Army certifying that the individual is temporarily indispensable is approved.

All such men holding Naval Reserve commissions are subject to call at any time, at the discretion of the Secretary of the Navy. Temporary deferments are granted only on approval of applications made by the institution to the Surgeon General of the Navy.

THOSE UNDER 45

All male physicians, dentists or veterinarians under 45 are liable for military service. That their services may be utilized in a professional capacity as officers, they should be made available through the facilities of the Procurement and Assignment Service. Wherever possible, their present positions in civil life should be filled or provisions made for filling their positions, if necessary, by (a) those who are over 45, (b) those under 45 who are physically dis-

qualified for military service, (c) women and (d) instructors and those engaged in research who do not possess M.D., D.D.S. or D.V.M. degrees but whose utilization would make available physicians, dentists or veterinarians for military service.

THOSE OVER 45

All physicians, dentists or veterinarians over 45 should enroll with the Procurement and Assignment Service. Every possible effort will be made to retain those who are essential in their present capacities. Those who are available for assignment to military, governmental, industrial or civil agencies may be asked by the Procurement and Assignment Service to serve those agencies.

MAINTAINING EDUCATIONAL, INDUSTRIAL AND CIVILIAN MEDICAL, DENTAL AND VETERINARY SERVICES

Faculties of Schools.—Authorities in medical, dental and veterinary schools have forwarded lists to the Procurement and Assignment Service containing the names of members of their faculties who are considered essential to a proper continuation of medical, dental and veterinary education. These lists will be consulted in determining those who are considered essential. Should the status of any individual listed as essential for teaching be changed, the Procurement and Assignment Service should be immediately notified by the college authorities.

Research.—The burden of proof as to the essential character of research set forth as a reason for deferment rests on the individual and the employing institution. Efforts will be made to maintain without interruption the progress of scientific research, particularly that related to the war effort.

Civil Practice.—The Procurement and Assignment Service will do its utmost to maintain a supply of medical, dental and veterinary services for all industrial and civilian needs. Already the state and county medical, dental and veterinary societies, under the direction of state chairmen, are assembling lists of physicians, dentists and veterinarians considered essential in the positions they now occupy.

ADVISORY COMMITTEES AND LIAISON OFFICERS

On recommendations of the Directing Board of the Procurement and Assignment Service, the Office of Defense Health and Welfare Services has appointed the following advisory committees and consultants to the Procurement and Assignment Service: Dentistry, Veterinary Medicine, Hospitals, Women Physicians, Industrial Health and Medicine, Medical Education, Negro Physicians and Public Health.

These committees are advisory to the Directing Board in establishing policies regarding the availability and utilization of personnel in their respective fields.

THE COMMITTEE OF INFORMATION

With its consultants, the Committee on Information is charged with disseminating information to all physicians, dentists and veterinarians and to the public in order that they may be kept informed of the progress of the Procurement and Assignment Service, and in order to secure their coöperation in its activities (appendix I).

LIAISON OFFICERS

Each of the governmental agencies utilizing the services of physicians, dentists and veterinarians has appointed a liaison officer to advise and assist the Procurement and Assignment Service (appendix I).

SPECIAL INFORMATION

Specialization.—In general, determination as to special qualifications of persons entering the medical services of the Army and Navy depends on the classification of specialists by advisory committees established through the Division of Medical Sciences of the National Research Council and certifications of boards in the various specialties. Moreover, the recommendations of state and county committees and the statements of the individuals on questionnaires will be taken into consideration. On questions of dental and veterinary specialization, the official organization will be consulted.

Citizenship.—Regulations of the United States Army and Navy do not permit the

commissioning of officers who are not citizens of the United States. A commission in the United States Navy requires full citizenship for a period of ten years, and the ten year period to have been spent in the United States. Similarly, all federal agencies utilizing physicians, dentists and veterinarians now demand citizenship as a prerequisite to such enrolment.

Persons who do not possess full citizenship papers but who have been licensed to practice in any of the states of the United States should enroll with the Procurement and Assignment Service so that their services may be utilized when the opportunity arises. They should, however, do their utmost to continue in their efforts to secure citizenship to enable them to qualify for positions that they are not able to fill because of lack of these essentials.

Physicians, dentists or veterinarians who have their first citizenship papers but who do not have a license to practice and who are under the age of 45 come within the provisions of the Selective Service acts and may be inducted in the capacity of enlisted men. When this occurs, these should make known their special capacities, so that their services may be utilized to the fullest extent in the medical departments of the Army and Navy in an enlisted capacity.

College Qualifications.—Commissions in the medical departments of the United States Army and Navy and in federal agencies are granted only to graduates of schools recognized by such agencies. For physicians, twelve months of internship or its equivalent is required.

Those wishing further information concerning the qualifications necessary to appear for examination leading to a commission in the Army or Navy or to service with any other governmental service should apply directly to such agency.

Women Physicians, Dentists and Veterinarians.—The United States Army and Navy do not permit the commissioning of women physicians, dentists or veterinarians. However, all should enroll with the Procurement and Assignment Service so that they may be recommended to such positions as are available in other federal agen-

cies, industry or civilian capacities in which their services may be required.

The needs will no doubt be particularly acute in local, state and national institutions, in teaching and staff positions and in special occupations with the Office of Civilian Defense in the care of women and children under emergency conditions.

APPENDIX I.—PROCUREMENT AND ASSIGNMENT SERVICE.—CENTRAL ORGANIZATION

OFFICE OF DEFENSE HEALTH AND WELFARE SERVICES

Directing Board

Dr. Frank H. Lahey, Chairman, President, American Medical Association, 605 Commonwealth Avenue, Boston.

Dr. Harvey B. Stone, Vice Chairman, Associate Professor of Surgery, Johns Hopkins University School of Medicine, 18 West Franklin Street, Baltimore.

Dr. C. Willard Camalier, Chairman, Dental Preparedness Committee, American Dental Association, 1726 Eye Street N. W., Washington, D. C.

Dr. Harold S. Diehl, Dean of Medical Sciences, University of Minnesota, Minneapolis.

Dr. James E. Paullin, 384 Peachtree Street, N. E., Atlanta, Ga.

Dr. Sam F. Seeley, Executive Officer.

Liaison Officers

Major Paul A. Paden, M. C., Office of the Surgeon General, War Department, room 1113-B, 1818 H Street, N. W., Washington, D. C.

Commander Thomas B. Magath, Medical Officers Reserve Section, U. S. Navy, Washington, D. C.

Dr. Paul M. Stewart, U. S. Public Health Service, 23d and Constitution Avenue, N. W., Washington, D. C.

Lieut. Col. Richard H. Eanes, M. C., Selective Service System, Potomac Park Apartment, 21st and C Streets N. W., Washington, D. C.

Dr. Hugo Mella, Veterans Administration, Washington, D. C.

Dr. George Baehr, Chief Medical Officer, Office of Civilian Defense, DuPont Circle Building, Washington, D. C. Tel. Republic 5050, Ext. 505.

Dr. Edwin F. Daily, Director, Division of Health Services, Children's Bureau, Department of Labor, Washington, D. C.

Dr. Verne K. Harvey, U. S. Civil Service Commission, Washington, D. C.

Advisory Committees

DENTISTRY

Dr. John T. O'Rourke, Chairman, Dean of Dental School, University of Louisville, Louisville, Ky.

Dr. Leroy M. S. Miner, Vice Chairman, Dean of Dental School, Harvard University, Boston.

Dr. Frederick B. Noyes, 55 E. Washington Street, Chicago.

Dr. Guy S. Millberry, R. F. D. No. 2, Box 181, Los Gatos, Calif.

Dr. B. K. Westfall, 1006 Hume-Mansur Building, Indianapolis.

CONSULTANT

Dr. Gerald D. Timmons, Executive Secretary, American Dental Association, 212 East Superior Street, Chicago.

HOSPITALS

Dr. Winford H. Smith, Chairman, Director, Johns Hopkins Hospital, Baltimore.

Dr. Nathaniel W. Faxon, Vice Chairman, Director, Massachusetts General Hospital, Boston.

Dr. Claude W. Munger, Director, St. Luke's Hospital, 421 W. 113th Street, New York.

Dr. M. T. MacEachern, Associate Director, American College of Surgeons, 40 East Erie Street, Chicago.

Rev. Fr. Alphonse M. Schwitalla, Dean, St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis.

INDUSTRIAL HEALTH AND MEDICINE

Dr. C. D. Selby, Chairman, Medical Director, General Motors Corporation, Detroit.

Dr. A. J. Lanza, Vice Chairman, Assistant Medical Director, Metropolitan Life Insurance Company, 1 Madison Avenue, New York.

Mr. William Yant, Director of Research and Development, Mine Safety Appliance Company, Brad-dock, Thomas & Meade Streets, Pittsburgh.

Dr. Lloyd Noland, Chief Surgeon, Tennessee Coal, Iron and Railroad Company, Fairfield, Ala.

Dr. E. C. Holmblad, 28 East Jackson Boulevard, Chicago.

Professor Philip Drinker, Department of Industrial Hygiene, School of Public Health, Harvard University, 55 Shattuck Street, Boston.

Dr. George M. Smith, Department of Anatomy, Yale University School of Medicine, New Haven, Conn.

MEDICAL EDUCATION

Dr. C. Sidney Burwell, Chairman, Dean, Harvard University Medical School, 25 Shattuck Street, Boston.

Dr. William S. Middleton, Vice Chairman, Dean of Medical School, University of Wisconsin, 1300 University Avenue, Madison, Wis.

Dr. Willard C. Rappleye, Dean, College of Physicians and Surgeons, Columbia University, 630 West 168th Street, New York.

Dr. John H. Musser, Professor of Medicine, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans.

Dr. Loren R. Chandler, Dean, School of Medicine, Stanford University, San Francisco.

NEGRO HEALTH

Dr. M. O. Bousfield, Chairman, Director of Negro Health, Julius Rosenwald Fund, 4901 Ellis Avenue, Chicago.

Dr. Russell A. Dixon, Vice Chairman, Dean, College of Dentistry, Howard University, Washington, D. C.

Dr. G. Hamilton Francis, 1024 East Liberty Street, Norfolk, Va.

Mr. A. W. Dent, Superintendent, Flint Goodridge Hospital, New Orleans.

Dr. A. N. Vaughn, Surgeon, Homer G. Phillips Hospital, St. Louis.

PUBLIC HEALTH

Dr. Carl V. Reynolds, Chairman, 216 West Jones Street, Raleigh, N. C.

Dr. Harry S. Mustard, Vice Chairman, DeLamar Institute of Public Health, 600 West 168th Street, New York.

Dr. Gaylord West Anderson, University of Minnesota, Minneapolis.

Dr. Waller S. Leathers, School of Medicine, Vanderbilt University, Nashville, Tenn.

Dr. John L. Rice, 125 Worth Street, New York.

VETERINARY MEDICINE

Dr. John G. Hardenbergh, Chairman, Executive Secretary, American Veterinary Medical Association, 600 South Michigan Avenue, Chicago.

Dr. John R. Mohler, Vice Chairman, Chief, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

Dr. Harry W. Jakeman, President, American Veterinary Medical Association, 44 Bromfield Street, Boston.

Dr. William A. Hagan, Dean, New York State Veterinary College, Cornell University, Ithaca, N. Y.

Dr. Cassius Way, 25 Vanderbilt Avenue, New York.

WOMEN PHYSICIANS

Dr. Sara Murray Jordan, Chairman, 605 Commonwealth Avenue, Boston.

Dr. Margaret D. Craighill, Vice Chairman, Dean, Woman's Medical College of Pennsylvania, East Falls, Philadelphia.

Dr. Ruth Evelyn Boynton, University of Minnesota, Minneapolis.

Dr. Ada Chree Reid, Executive Secretary, American Medical Women's Association, 102 E. 22d Street, New York.

Dr. Irma Jackson, Forest Hills Inn, Forest Hills, N. Y.

INFORMATION

Dr. Morris Fishbein, Chairman, Editor, Journal American Medical Association, 535 North Dearborn Street, Chicago.

Dr. Ira V. Hiscock, Vice Chairman, Yale University School of Medicine, New Haven, Conn.

Mr. J. J. Bloomfield, Sanitary Engineer, U. S. Public Health Service, National Institute of Health, Bethesda, Md.

Dr. John F. Fulton, Yale University School of Medicine, 333 Cedar Street, New Haven, Conn.

Dr. Richard M. Hewitt, Mayo Clinic, Rochester, Minn.

Dr. Sanford V. Larkey, Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington, D. C.

Dr. Robert N. Nye, Managing Editor, New England Journal of Medicine, 8 Fenway, Boston.

CONSULTANTS

Mr. Watson Davis, 1719 N Street N. W., Washington, D. C.

Mr. David Dietz, Science Editor, Scripps-Howard Newspapers, United Press, Cleveland Press Building, Cleveland.

Mr. William Laurence, New York Times, New York.

Mr. Arthur T. Robb, Editor of Editor and Publisher, 1475 Broadway, New York.

Dr. Gerald D. Timmons, Executive Secretary, American Dental Association, 212 East Superior Street, Chicago.

Dr. John G. Hardenbergh, Executive Secretary, American Veterinary Medical Association, 600 South Michigan Avenue, Chicago.

APPENDIX 2.—REGIONAL ORGANIZATIONS

FIRST CORPS AREA
Corps Area Committee

Chairman.—Dr. W. G. Phippen, 31 Chestnut Street, Salem, Mass.

Physicians.—Dr. Deering G. Smith, 77 Main Street, Nashua, N. H.; Dr. Lucius Kingman, 76 Waterman Street, Providence, R. I.

Dentist.—Dr. Philip E. Adams, 106 Marlboro Street, Boston.

Veterinarian.—Dr. R. W. Smith, Concord, N. H. Hospital Representative.—Dr. Nanthaniel Faxon, Massachusetts General Hospital, Boston.

Medical Education Representative.—Dr. C. Sidney Burwell, 25 Shattuck Street, Boston.

State Chairmen in First Corps Area

CONNECTICUT

Medical.—Dr. Creighton Barker, 258 Church Street, New Haven.

Dental.—Dr. Louis H. Siegal, 750 Main Street, Hartford.
Veterinary Medical.—Dr. Edwin Laitinen, 993 N. Main Street, West Hartford.

MAINE

Medical.—Dr. John G. Towne, 135 Main Street, Waterville.
Dental.—Dr. Gilles C. Grant, 655 Congress Street, Portland.
Veterinary Medical.—Dr. P. R. Baird, 52 Pleasant Street, Waterville.

MASSACHUSETTS

Medical.—Dr. Reginald Fitz, 319 Longwood Avenue, Boston.
Dental.—Dr. Andrew J. Rafferty, 390 Main Street, Worcester.
Veterinary Medical.—Dr. Harrie W. Peirce, 100 Nashua Street, Boston.

NEW HAMPSHIRE

Medical.—Dr. Deering G. Smith, 77 Main Street, Nashua.
Dental.—Dr. William H. Putney, 85 Pleasant Street, Concord.
Veterinary Medical.—Dr. R. W. Smith, State House, Concord.

RHODE ISLAND

Medical.—Dr. Halsey DeWolf, 199 Thayer Street, Providence.
Dental.—Dr. E. C. Elliott, 615 Union Trust Bldg., Providence.
Veterinary Medical.—Dr. J. S. Barber, 560 Pleasant Street, Pawtucket.

VERMONT

Medical.—Dr. Benjamin F. Cook, 46 Nichols Street, Rutland.
Dental.—Dr. Maxwell L. Jameson, 69 Pine Street, Burlington.
Veterinary Medical.—Dr. A. A. Mortimer, 27 Central Street, Randolph.

SECOND CORPS AREA

Corps Area Committee

Chairman.—Dr. A. W. Booth, 222 West Church Street, Elmira, N. Y.

Physicians.—Dr. Samuel J. Kopetzky, 71 East 80th Street, New York; Dr. W. J. Carrington, 905 Pacific Avenue, Atlantic City, N. J.

Dentists.—Dr. William McG. Burns, 80 Hanson Place, Brooklyn; Dr. Allen T. Newman, 209 East 23d Street, New York.

Veterinarian.—Dr. R. R. Birch, Route 2, Ithaca, N. Y.

Hospital Representative.—Dr. Claude W. Munger, St. Luke's Hospital, New York.

Medical Education Representative.—Dr. Willard C. Rappleye, Columbia University Medical School, New York.

State Chairmen in Second Corps Area

DELAWARE

Medical.—Dr. William H. Speer, 917 Washington Street, Wilmington.

Dental.—Dr. William Stewart, Medical Arts Building, Wilmington.

Veterinary Medical.—Dr. Harry McDaniel, Jr., State Board of Agriculture, Dover.

NEW JERSEY

Medical.—Dr. Charles H. Schlichter, 143 E. State Street, Trenton.

Dental.—Dr. E. C. Stillwell, 815 Bloomfield, Glen Ridge.

Veterinary Medical.—Dr. A. W. Smith, 8 Longview Road, Livingston.

NEW YORK

Medical.—Dr. Samuel J. Kopetzky, 71 E. 80th Street, New York

Dental.—Dr. William McG. Burns, 80 Hanson Place, Brooklyn.

Veterinary Medical.—Dr. Albert L. Brown, Route 1, Adams.

THIRD CORPS AREA

Corps Area Committee

Chairman.—Dr. A. M. Shipley, University Hospital, Baltimore.

Physicians.—Dr. C. H. Henninger, 500 Penn Avenue, Pittsburgh; Dr. Hugh H. Trout, 1301 Franklin Road, Roanoke, Va.

Dentists.—Dr. B. Lucien Brun, 827 Park Avenue, Baltimore; Dr. Harry Bear, 410 Professional Bldg., Richmond, Va.

Veterinarian.—Dr. Mark Welsh, College Park, Md.

Hospital Representative.—Dr. Winford H. Smith, Johns Hopkins Hospital, Baltimore.

Medical Education Representative.—Dr. William Pepper, University of Pennsylvania School of Medicine, Philadelphia.

State Chairmen in Third Corps Area

MARYLAND

Medical.—Dr. Charles W. Maxson, 827 N. Charles Street, Baltimore.

Dental.—Dr. T. J. Bland, Medical Arts Building, Baltimore.

Veterinary Medical.—Dr. A. L. Brueckner, College Park.

PENNSYLVANIA

Medical.—Dr. Charles H. Henninger, 500 Penn Avenue, Pittsburgh.

Dental.—Dr. R. H. Nones, 1930 Chestnut Street, Philadelphia.

Veterinary Medical.—Dr. Ernest W. Hogg, 20 Darling Street, Wilkes-Barre.

VIRGINIA

Medical.—Dr. Hugh H. Trout, 1301 Franklin Road, Roanoke.

Dental.—Dr. J. H. John, Medical Arts Bldg., Roanoke.

Veterinary Medical.—Dr. I. D. Wilson, Virginia Polytechnic Institute, Blacksburg.

DISTRICT OF COLUMBIA

Medical.—Dr. Francis X. McGovern, 1835 Eye Street N. W., Washington, D. C.

Dental.—Dr. George Albert Smith, 1835 Eye Street N. W., Washington, D. C.

Veterinary Medical.—Dr. A. E. Wight, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C.

FOURTH CORPS AREA

Corps Area Committee

Chairman.—Dr. Edgar Greene, 478 Peachtree Street N. E., Atlanta, Ga.

Physicians.—Dr. Alfred A. Walker, 2250 Highland Avenue, Birmingham, Ala.; Dr. Edward H. Jelks, P. O. Box 1018, Jacksonville, Fla.

Dentists.—Dr. Claude R. Wood, 606 Medical Arts Building, Knoxville, Tenn.; Dr. Ralph R. Byrnes, 106 Forest Avenue N. E., Atlanta, Ga.

Veterinarian.—Dr. B. T. Simms, Regional Animal Disease Research Laboratory, Auburn, Ala.

Hospital Representative.—Dr. J. Moss Beeler, Grady Hospital, Atlanta, Ga.

Medical Education Representative.—Dr. R. H. Oppenheimer, 50 Armstrong Street, Atlanta, Ga.

State Chairmen in Fourth Corps Area

ALABAMA

Medical.—Dr. B. F. Adstin, 519 Dexter Avenue, Montgomery.

Dental.—Dr. C. B. Bray, American Cast Iron Pipe Company, Birmingham.

Veterinary Medical.—Dr. R. S. Sugg, School of

Veterinary Medicine, Alabama Polytechnic Institute, Auburn.

FLORIDA

Medical.—Dr. Edward Jelks, Box 1018, Jacksonville.

Dental.—Dr. E. C. Lunsford, 126 W. San Marius, Miami.

Veterinary Medical.—Dr. J. L. Ruble, 1600 N. Orange Avenue, Orlando.

GEORGIA

Medical.—Dr. Edgar H. Greene, 478 Peachtree Street N. E., Atlanta.

Dental.—Dr. R. H. Murphy, 920 Persons Building, Macon.

Veterinary Medical.—Dr. J. M. Sutton, Sylvester.

LOUISIANA

Medical.—Dr. C. Grenes Cole, 921 Canal Street, New Orleans.

Dental.—Dr. Larry Dupuy, 837 Maison Blanche Building, New Orleans.

Veterinary Medical.—Dr. E. P. Flower, Box 24, Baton Rouge.

MISSISSIPPI

Medical.—Dr. T. M. Dye, Box 295, Clarksdale.

Dental.—Dr. George P. Evans, Standard Life Building, Jackson.

Veterinary Medical.—Dr. E. S. Brashier, Mississippi State Live Stock San. Bd., Jackson.

NORTH CAROLINA

Medical.—Dr. Hubert B. Haywood, 127 W. Hargett Street, Raleigh.

Dental.—Dr. H. O. Lineberger, 804 Professional Building, Raleigh.

Veterinary Medical.—Dr. William Moore, Department of Agriculture, Raleigh.

SOUTH CAROLINA

Medical.—Dr. W. L. Pressly, Due West.

Dental.—Dr. E. W. Sheperd, Spartanburg.

Veterinary Medical.—Dr. R. A. Mays, J. C. Calhoun State Office Building, Columbia.

TENNESSEE

Medical.—Dr. W. C. Dixon, 706 Church Street, Nashville.

Dental.—Dr. Lawrence T. Kennedy, Medical Arts Building, Knoxville.

Veterinary Medical.—Dr. M. Jacob, University of Tennessee, Knoxville.

FIFTH CORPS AREA

Corps Area Committee

Chairman.—Dr. E. L. Henderson, 606 S. 4th Street, Louisville, Ky.

Physicians.—Dr. Robert Conard, Hartman Theater Building, Columbus, Ohio; Dr. Larue Carter, 1820 E. 10th Street, Indianapolis.

Dentists.—Dr. Earl D. Lowry, 79 E. State Street, Columbus, Ohio; Dr. Wendell D. Postle, 1714 N. High Street, Columbus, Ohio.

Veterinarian.—Dr. A. F. Schalk, Ohio State University, Columbus, Ohio.

Hospital Representative.—Dr. Robert H. Bishop, 2065 Adelbert Road, Cleveland.

Medical Education Representative.—Dr. Hardy A. Kemp, Ohio State University Medical School, Columbus, Ohio.

State Chairmen in Fifth Corps Area

INDIANA

Medical.—Dr. Charles R. Bird, 23 E. Ohio Street, Indianapolis.

Dental.—Dr. H. T. Berkey, Wayne Pharmacal Building, Fort Wayne.

Veterinary Medical.—Dr. Charles C. Dobson, New Augusta.

KENTUCKY

Medical.—Dr. Arthur T. McCormack, 620 S. 3d Street, Louisville.

Dental.—Dr. E. C. Hume, Heyburn Building, Louisville.

Veterinary Medical.—Dr. Arthur J. Kay, 517 Murray Street, Frankfort.

OHIO

Medical.—Dr. Robert Conard, Hartman Theater Building, Columbus.

Dental.—Dr. Frank C. Starr, 150 E. Broad Street, Columbus.

Veterinary Medical.—Dr. D. C. Hyde, 1700 Arlington Avenue, Columbus.

WEST VIRGINIA

Medical.—Dr. R. H. Walker, 240 Capitol Street, Charleston.

Dental.—Dr. Ira J. Kail, 1018 First National Bank Bldg, Huntington.

Veterinary Medical.—Dr. H. M. Newton, P. O. Box 1721, Charleston.

SIXTH CORPS AREA

Corps Area Committee

Chairman.—Dr. Charles H. Phifer, 30 North Michigan Avenue, Chicago.

Physicians.—Dr. P. R. Urmston, 916 Washington Avenue, Bay City, Mich.; Dr. Stephen E. Gavin, 104 South Main Street, Fond du Lac, Wis.

Dentists.—Dr. Leo Kremer, 55 East Washington Street, Chicago; Dr. Paul H. Jeserich, W. K. Kellogg Institute, Ann Arbor, Mich.

Veterinarian.—Dr. Ward Giltner, Michigan State College, East Lansing, Mich.

Hospital Representative.—Mr. Joseph G. Norby, Columbia Hospital, Milwaukee.

Medical Education Representative.—Dr. A. C. Bachmeyer, 950 East 59th Street, Chicago.

State Chairmen in Sixth Corps Area

ILLINOIS

Medical.—Dr. Harold M. Camp, 2245 South Main Street, Monmouth.

Dental.—Dr. William I. McNeil, 59 East Madison Street, Chicago.

Veterinary Medical.—Dr. A. E. Bott, 1317 Pennsylvania Avenue, East St. Louis.

MICHIGAN

Medical.—Dr. P. R. Urmston, 916 Wash. Avenue, Bay City.

Dental.—Dr. J. O. Goodsell, 2nd Nat. Bank Building, Saginaw.

Veterinary Medical.—Dr. B. J. Killham, Michigan State College, East Lansing.

WISCONSIN

Medical.—Dr. R. E. Fitzgerald, 2750 North Teutonia Avenue, Milwaukee.

Dental.—Dr. Charles Baumann, 408 West Greenfield Avenue, Milwaukee.

Veterinary Medical.—Dr. W. Wisnicky, University of Wisconsin, Madison.

SEVENTH CORPS AREA

Corps Area Committee

Chairman.—Dr. Roy W. Fouts, 107 South 17th Street, Omaha.

Physicians.—Dr. F. L. Loveland, 109 West 9th Street, Topeka, Kan.; Dr. Robert L. Parker, 3510 6th Avenue, Des Moines, Iowa.

Dentists.—Dr. F. A. Pierson, 1112 Federal Security Building, Lincoln, Neb.; Dr. A. W. Bryan, Box 727, Iowa City.

Veterinarian.—Dr. H. D. Bergman, Iowa State College, Ames, Iowa.

Hospital Representative.—Mr. Robert E. Neff, University Hospital, Iowa City.

Medical Education Representative.—Dr. C. W. N. Poynter, 42d Street and Dewey Avenue, Omaha.

State Chairmen in Seventh Corps Area

ARKANSAS

Medical.—Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith.

Dental.—Dr. I. M. Sternberg, 1st National Bank Building, Fort Smith.

Veterinary Medical.—Dr. Joe S. Campbell, Route 4, Little Rock.

IOWA

Medical.—Dr. T. F. Suchomel, 305 2d Street, Cedar Rapids.

Dental.—Dr. John Voss, Voss Building, Iowa City.

Veterinary Medical.—Dr. A. R. Menary, 1721 Blake Boulevard, Cedar Rapids.

KANSAS

Medical.—Dr. F. L. Loveland, 109 West 9th Street, Topeka.

Dental.—Dr. John W. Richmond, Huron Building, Kansas City.

Veterinary Medical.—Dr. R. R. Dykstra, Kansas State College, Manhattan.

MINNESOTA

Medical.—Dr. William F. Braasch, 102 2d Street, Rochester.

Dental.—Dr. J. P. Werrick, Medical Arts Building, Minneapolis.

Veterinary Medical.—Dr. C. E. Cotton, 3145 Portland Avenue, Minneapolis.

MISSOURI

Medical.—Dr. Robert Mueller, 3115 South Grand Avenue, St. Louis.

Dental.—Dr. R. J. Rinehart, K. C. Western Dental College, Kansas City.

Veterinary Medical.—Dr. S. W. Haigler, 7645 Delmar Boulevard, St. Louis.

NEBRASKA

Medical.—Dr. A. A. Conrad, Crete.

Dental.—Dr. Lawrence A. Donahue, 1128 City National Bank Building, Omaha.

Veterinary Medical.—Dr. W. T. Spencer, Livestock Exchange Building, Omaha.

NORTH DAKOTA

Medical.—Dr. L. W. Larson, 221 5th Street, Bismarck.

Dental.—Dr. A. O. Schjeldahl, 523½ 5th Avenue, Valley City.

Veterinary Medical.—Dr. R. E. Shigley, 710 2d Street S. E., Minot.

SOUTH DAKOTA

Medical.—Dr. William Duncan, Webster.

Dental.—Dr. R. W. Ellis, Salem.

Veterinary Medical.—Dr. D. L. Cotton, Beresford.

WYOMING

Medical.—Dr. George H. Phelps, 1606 Capitol Avenue, Cheyenne.

Dental.—Dr. L. C. Hunt, 308 West 3rd Avenue, Cheyenne.

Veterinary Medical.—Dr. H. D. Port, 304 Capitol Building, Cheyenne.

EIGHTH CORPS AREA

Corps Area Committee

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Physicians.—Dr. Holman Taylor, 1404 West El Paso Street, Fort Worth, Texas; Dr. John W. Ames, 227 16th Street, Denver.

Dentists.—Dr. T. G. Duckworth, 915 Medical Arts Building, San Antonio, Texas; Dr. Fred C. Elliott, 1018 Blodgett Avenue, Houston, Texas.

Veterinarian.—Dr. M. B. Starnes, City Health Department, Dallas, Texas.

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Medical Education Representative.—Dr. Maurice H. Rees, 4200 East 9th Avenue, Denver.

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Dental.—Dr. W. A. Baker, Professional Building, Phoenix.

Veterinary Medical.—Dr. T. B. Jones, 105 Capitol Building, Phoenix.

COLORADO

Medical.—Dr. John Ames, 227 16th Street, Denver.

Dental.—Dr. E. M. Silverberg, 809 Republic Building, Denver.

Veterinary Medical.—Dr. Floyd Cross, Colorado State College, Fort Collins.

NEW MEXICO

Medical.—Dr. L. B. Cohenour, 221 Central Avenue, Albuquerque.

Dental.—Dr. H. R. Chapin, El Moro Building, Gallup.

Veterinary Medical.—Dr. S. W. Wiest, Box 75, Santa Fe.

OKLAHOMA

Medical.—Dr. Henry H. Turner, 1200 North Walker, Oklahoma City.

Dental.—Dr. A. C. Seids, 1200 North Walker, Oklahoma City.

Veterinary Medical.—Dr. L. J. Allen, 1610 North Ellison, Oklahoma City.

TEXAS

Medical.—Dr. Holman Taylor, 1404 West El Paso Street, Fort Worth.

Dental.—Dr. J. E. Robinson, Medical Arts Building, San Antonio.

Veterinary Medical.—Dr. T. O. Booth, 2002 W. T. Waggoner Building, Fort Worth.

NINTH CORPS AREA

Corps Area Committee

Chairman.—Dr. Charles A. Dukes, 426 17th Street, Oakland, Calif.

Physicians.—Dr. John H. Fitzgibbon, 812 S. W. Washington, Portland, Ore.; Dr. John M. O'Shea, 422 Riverside Avenue, Spokane, Wash.

Dentists.—Dr. B. C. Kingsbury, 490 Post Street, San Francisco; Dr. E. O. Sloman, 344 14th Street, San Francisco.

Veterinarian.—Dr. C. M. Haring, University of California, Berkeley, Calif.

Hospital Representative.—Dr. Benjamin W. Black, 2701 14th Avenue, Oakland, Calif.

Medical Education Representative.—Dr. Loren R. Chandler, Stanford University, School of Medicine, San Francisco.

State Chairmen in Ninth Corps Area

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Dental.—Dr. Kenneth Ruedy, 3780 Wilshire Boulevard, Los Angeles; Dr. John W. Leggett, 490 Post Street, San Francisco.

Veterinary Medical.—Dr. Joseph M. Arburua, 26 Fell Street, San Francisco.

IDAHO

Medical.—Dr. F. M. Cole, Caldwell.

Dental.—Dr. J. E. Bennett, Idaho Falls.

Veterinary Medical.—Dr. Arthur P. Schneider, 2519 Boise Avenue, Boise.

MONTANA

Medical.—Dr. Herbert Caraway, 115 North 28th Street, Billings.

Dental.—Dr. D. H. McCauley, 9 First Avenue, Laurel.

Veterinary Medical.—Dr. W. J. Butler, c/o Capitol Station, Helena.

NEVADA

Medical.—Dr. C. W. West, 120 North Virginia Street, Reno.

Dental.—Dr. G. C. Steinmiller, Masonic Temple, Reno.

Veterinary Medical.—Dr. Edward Records, University of Nevada, Reno.

OREGON

Medical.—Dr. Wilson Johnston, 1020 S. W. Taylor Street, Portland.

Dental.—Dr. N. L. Zimmerman, Medical Dental Building, Portland.

Veterinary Medical.—Dr. Fred W. Lange, 855 Belmont Street, Salem.

UTAH

Medical.—Dr. John F. Sharp, 75 S. Main, Salt Lake City.

Dental.—Dr. C. O. Robinson, Medical Arts Building, Salt Lake City.

Veterinary Medical.—Dr. W. H. Hendricks, 1419 East 17th South Street, Salt Lake City.

WASHINGTON

Medical.—Dr. Raymond Zech, 509 Olive Way, Seattle.

Dental.—Dr. L. L. Foote, Medical & Dental Building, Seattle.

Veterinary Medical.—Dr. M. O. Barnes, 203 Federal Building, Olympia.

APPENDIX 3.—ADDRESSES OF NAVY COMMANDANTS

The addresses of commandants of the several naval districts and the limits of their jurisdiction as far as Naval Reserve is concerned are:

Commandant, 1st Naval District, North Station Office Building, 150 Causeway Street, Boston. (States of Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island, including Block Island.)

Commandant, 3d Naval District, Federal Building, 96 Church Street, New York. (States of New York, Connecticut, and upper New Jersey, including counties of Mercer, Monmouth, and all counties north thereof, also Nantucket Shoals Lightship.)

Commandant, 4th Naval District, Navy Yard, Philadelphia. (States of Pennsylvania, southern part of New Jersey, including counties of Burlington, Ocean, and all counties south thereof; Delaware, including Winters Quarter Shoal Light Vessel.)

Commandant, 5th Naval District, Naval Operating Base, Norfolk, Va. (States of Maryland, except

Prince Georges, Montgomery, and Charles Counties; Virginia, except Arlington, Fairfax, Stafford, King George, and Prince William Counties, and the city of Alexandria; West Virginia and the counties of Currituck, Camden, Pasquotank, Gates, Perquimans, Chowan, Dare, Tyrrell, Washington, Hyde, Beaufort, Pamlico, Craven, Jones, Carteret and Onslow in North Carolina, also the Diamond Shoal Lightship.)

Commandant, 6th Naval District, Navy Yard, Charleston, S. C. (States of South Carolina, Georgia, and North Carolina, except the counties of Currituck, Camden, Pasquotank, Gates, Perquimans, Chowan, Dare, Tyrrell, Washington, Hyde, Beaufort, Pamlico, Craven, Jones, Carteret and Onslow.)

Commandant, 7th Naval District, Naval Station, Key West, Fla. (State of Florida, except counties west of Apalachicola River.)

Commandant, 8th Naval District, Federal Building, New Orleans, La. (States of Alabama, Tennessee, Louisiana, Mississippi, Arkansas, Oklahoma, Texas, and Florida, except counties east of Apalachicola River.)

Commandant, 9th Naval District, Naval Training Station, Great Lakes, Ill. (States of Ohio, Michigan, Kentucky, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.)

Commandant, 10th Naval District, San Juan, P. R. (All island possessions of the United States pertaining to Puerto Rico and the Virgin Islands.)

Commandant, 11th Naval District, Naval Operating Base, San Diego, Calif. (States of New Mexico, Arizona, southern part of California, including counties of Santa Barbara, Kern, and San Bernardino, and all counties south thereof.)

Commandant, 12th Naval District, 1095 Market Street, San Francisco, Calif. (States of Colorado, Utah, Nevada, northern part of California, including counties of San Luis Obispo, Kings, Inyo, and Tulare and all counties north thereof.)

Commandant, 13th Naval District, Exchange Building, Seattle, Wash. (States of Washington, Oregon, Idaho, Montana, Wyoming, and Territory of Alaska.)

Commandant, 14th Naval District, Navy Yard, Pearl Harbor, T. H. (Hawaiian Island, and islands westward, including Midway.)

Commandant, 15th Naval District, Naval Station, Balboa, C. Z. (Panama Canal Zone.)

Commandant, 16th Naval District, Naval Station, Cavite, P. I. (Philippine Islands.)

Commandant, Navy Yard, Washington, D. C. (District of Columbia, Prince Georges, Montgomery, and Charles Counties, Maryland; and Arlington, Fairfax, Stafford, King George, and Prince William Counties, Virginia, and the city of Alexandria, Va.)



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MEMBER
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Treatment of Streptococcic Mastitis With Ty-Sin*

*(Combination of gramicidin and tyrocidin)

Extensive investigations by Little *et al.* (Rockefeller Foundation for Medical Research), Schalm (University of California), and Greenberg and Bryan (Michigan State College) have shown that the use of gramicidin is an effective, practical means of combating Mastitis due to *Streptococcus agalactiae*. Gramicidin (now designated as tyrothricin, which contains both gramicidin and tyrocidin) is an alcohol-soluble, water-insoluble substance isolated from cultures of an aerobic sporulating soil bacillus. Studies by the Jensen-Salsbery Laboratories have resulted in the development of Ty-Sin, an aqueous alcoholic suspension of tyrothricin (gramicidin and tyrocidin). The active principles are released only from an aqueous medium. Each 20

c.c. of Ty-Sin contains 40 mg. of tyrothricin.

Use of Ty-Sin

Lactating Cows—After thorough stripping of the quarter, 40 c.c. of Ty-Sin, which constitutes an average dose, is injected into the milk cistern via the teat canal, under strict aseptic conditions. The quarter is massaged vigorously to disperse the material, and is milked out at the next regular milking. Treatment may be repeated in seven to ten days as indicated.

Dry Cows—One 40-c.c. dose is injected as above, except that the material is left in the quarter. Only one injection is given.

Reactions

In some cases the milk for one to three days may be clabbered, flaky, or stringy. Gross changes in the milk resulting from the treatment usually disappear by the end of the third day. In general, influence on quantity of milk secreted is less than 1 per cent.

Contraindications

Quarters manifesting acute inflammation or marked fibrosis or atrophy should not be treated. It is satisfactory to treat cases showing acute flare-ups after evidence of the inflammation has subsided.

Mastitis Control

In brief, control of Mastitis revolves about the early detection of infected cows, segregation of these animals, precautionary measures to prevent spread of the infection to other susceptible animals in the herd, and the use of Ty-Sin. Physical examination of the udder, use of the thybromol test, direct microscopic examination of stained milk smears, and bacteriological examination of prop-

erly collected milk samples are important steps in detecting the infection and appraising the results of treatment with Ty-Sin.

Results

Published data on the use of gramicidin indicate an efficiency of approximately 76 per cent in ridding infected quarters of *S. agalactiae*, which is responsible for over 90 per cent of Mastitis cases today. Controlled studies with Ty-Sin under the same field conditions confronting the practicing veterinarian have demonstrated the like efficiency of this product. On the basis of reactions to the treatments and effectiveness, Ty-Sin is definitely superior to colloidal silver oxide.

Our Laboratories offer Ty-Sin in 250-c.c. vials at \$3.25, less discounts of 10 and 2 per cent.

(Write for Literature)

JENSEN-SALSBERY LABORATORIES, INC.
Kansas City, Missouri

